

ALY C S R R  
**AMERICAN**

# **RAILROAD JOURNAL.**

**STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.**

**HENRY V. POOR, *Editor.***

**SATURDAY, DECEMBER 11, 1858.**

**Second Quarto Series, Vol. XIV., No. 50.---Whole No. 1,182, Vol. XXXI.**

**ESTABLISHED IN 1831.**

**NEW-YORK:**

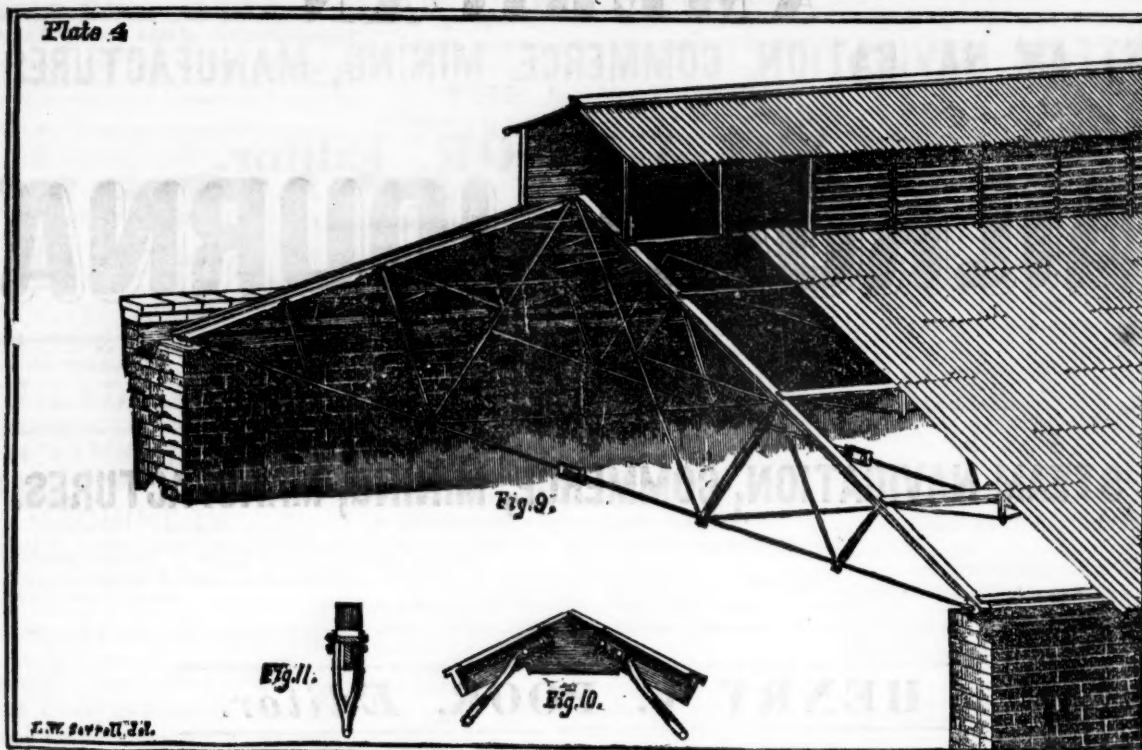
**PUBLISHED WEEKLY, BY**

**JOHN H. SCHULTZ & CO.**

**Front Room, Third Floor,**

**No. 9 Spruce Street.**

# ROOFING.



THE subscribers, manufacturers and importers of **PATENT GALVANIZED TINNED IRON**, respectfully invite the attention of railroad companies and others interested in the construction of Fire-proof Buildings and Roofs, to this material, which is highly recommended for strength, durability, and lightness, combined with elegance in appearance. The advertisers can refer particularly to Roofs they have

erected in the New York Navy Yard, also to that of the New Jersey Railroad and Trans. Company, Jersey City. In Great Britain it is used at all the railroad depots and navy yards in enormous quantity. The corrugated sheets, as on the above iron framed roof, are equally suited to lay upon wood framing, either straight, or curved.

Plain sheets are prepared to lay on boarded roofs (such as have had tin coverings) by making a flute on the side so as to fasten to a wood roll, reaching from ridge to eaves and placed between each tier of sheets, see *figs. 6 and 8* below. The transverse joints are secured as shown by *fig. 7*.

Estimates and designs for Buildings and Roofs, &c., &c.

Fig. 6.



$\frac{1}{2}$  full size.

Fig. 7.



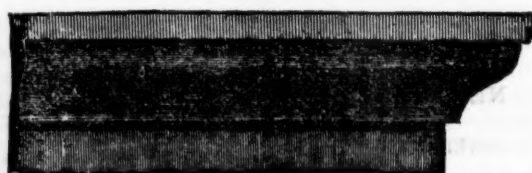
$\frac{1}{2}$  full size.

Fig. 8.



$\frac{1}{2}$  full size.

**Galvanized iron Cornices to any size or pattern, Ridge Caps, and Spouts.**  
**TELEGRAPH AND FENCING WIRE, BLACK SHEET IRON, SHIPS' IRON WORK,**  
**LIGHTNING RODS. CORRUGATED. SPIKES, NAILS, &c., promptly galvanized.**



**MARSHALL LEFFERTS & BROTHER,**  
**No. 57 Beekman st., NEW YORK.**



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MESSRS. ALGAR & STREET, No. 11 Clements Lane, Lombard Street, LONDON, are the authorised European Agents for the Journal.

## PRINCIPAL CONTENTS.

Adjustable Wrought Iron Bridge Truss .....	785
Pittsburg, Fort Wayne and Chicago Railroad .....	786
Baltimore and Ohio Railroad .....	786
Mississippi Central and Tennessee Railroad .....	787
Statistics of the Railways of the United Kingdoms .....	788
Railroads in New Jersey .....	789
Debt of South Carolina .....	789
How Shall the Railroads in Iowa be Built .....	792
Wisconsin .....	792
Richmond and York River Railroad .....	792
Long Island Railroad .....	792
London Correspondence .....	793
Railroad Earnings .....	793
New York City Railroads .....	794
Journal of Railroad Law .....	794
Navigation of Canals by Screw Steamers .....	795

## American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO. NO. 9 SPRUCE ST.

New York, Saturday, December 11, 1858.

### Adjustable Wrought Iron Bridge Truss.

Patent applied for by JOSEPH W. SPRAGUE, Rochester, N. Y.

The object of this invention is to obtain a homogeneous bridge truss, constructed in all its essential parts of wrought iron, free from rivets, capable of adjustment, everywhere using material in the most advantageous form, and at an expense little, if any, exceeding that of the former combination of wrought and cast iron, and much below that of the wrought iron trusses and girders heretofore used. In this truss, tensile strains are everywhere resisted by rods and solid links of wrought iron, and compressive strains by welded tubes of boiler plate iron. Although it is conceded that under the most favorable circumstances cast iron will resist compression better than wrought iron, yet there are certain dangers liable to happen to any casting, which renders its use unsafe for the long tubes, constituting the upper chords and vertical posts of iron trusses. The liability of the warping of the core—producing unequal thickness of metal—the possibility of the occurrence of air-holes in the casting, and the injury arising from

the unequal cooling of the metal, accidents which the most careful inspection cannot always discover—these liabilities have led engineers to prefer the use of wrought iron for compressive strains, because the process of rolling it into plates secures uniformity of thickness and freedom from imperfections. This new truss employs cast iron only at the intersection of the chords with the vertical posts and diagonals, and there the castings are so short, and from their form compelled to be so strong that no damage can arise from their introduction. A cast iron tube, whose length is only two or three times its diameter, will bear an almost indefinite strain; but as the ratio of the length to the diameter increases, the strength rapidly diminishes. In the present case, the length would never be more than one and a half times the diameter. If any are scrupulous about using castings even at these intersections, a little additional expense will substitute wrought iron, but the opinion of numerous distinguished engineers and bridge builders favors the use of the castings at these points. By means of the introduction of these castings it becomes possible to connect together, without a single rivet, the tubes, rods and timbers constituting the chords, posts, diagonals, sway braces and needle beams of the bridge, thus greatly diminishing the expense, and facilitating the rapidity and ease of construction; especially where the structure is to be erected at a distance from the workshop or foundry. A portion of the cast iron connecting piece passes inside of the wrought iron tube which butts against a shoulder upon the casting, and a wrought iron thimble is shrunk on over the joint, which is afterwards leaded, thus forming a fine connection, and at the same time making the tube air-tight, and keeping out all moisture. The thimble is shrunk on the casting before the tube is inserted, no heat or iron work being required at the time of erection. The joints can be made very accurately, being plain lathe work.

Trusses whose upper chords and vertical posts are composed of cast iron, give no sign of yielding till the instant of destruction, whereas wrought iron, like timber, yields gradually if it yields at all, and thus warns of danger in season to guard against it. The new truss is believed to be the only wrought iron one which admits of adjustment

in such case. The effect of frost upon cast iron is such as to render it dangerous for a train of cars to run over a bridge supported by long tubes of it in very cold weather. This danger is avoided by the introduction of wrought iron tubes. The unequal expansion and contraction of wrought and cast iron renders it impossible so to adjust a heterogeneous truss consisting of about an equal amount of both, in such a manner as always properly to distribute the strains; while in a structure nearly or quite homogeneous and free to move upon the abutments, the changes of temperature do no harm.

The upper and lower chords of a bridge are the parts which sustain the load—the other parts merely serving to transmit the load to the chords. The further apart (within certain limits) these cords are placed, that is, the higher the truss is, the more economically is the load sustained. The open construction of the truss bridge admits of great height with little expense, while the solid sides of the tubular girder, with their many stiffening angle irons, increase the weight, limit the height, and greatly enhance the cost of those ingenious structures. In this new truss, one or more series of light tubes is inserted between and parallel to the upper and lower chord, by means of which, in combination with internal bracing, such stiffness is given to the vertical posts, and such lateral stiffness to the structure, that the truss can be built of any height, and consequently of any length up to a limit much beyond that of any truss heretofore constructed. Plans and estimates have been requested, and are to be prepared for a single span of 325 feet, to be erected *without false work*, over a narrow gorge 360 feet above the surface of the water.

One reason why this bridge can be built nearly, or quite as cheaply as a cast and wrought iron combined, is that it admits of a better proportionment of the parts, and hence is much lighter. The new invention can be applied with equal advantage to all the forms of iron truss now constructed—converting them all into homogeneous wrought iron bridges.

Mr. Sprague has not yet quite completed his arrangements for introducing these bridges to the public, but for the present may be addressed on the subject at Rochester, N. Y.

**Pittsburg, Fort Wayne and Chicago R. R.**

This great road, 465 miles in length, is finished through to Chicago. Henceforth the company will run upon its own track, independent of all others. The distance over it, via Pittsburg and Philadelphia, will be less from Chicago to New York than by any other route; and there will be but one change of cars between Chicago and Philadelphia, and but two between Chicago and New York. A train will be put upon the road which will run from Cleveland to Chicago via Crestline without change of cars—the distance being no farther between these points than via Toledo. A train will also be run between Chicago and Cincinnati, via Lima and Dayton, which will afford a desirable route between these points. The distance between Toledo and Chicago via Fort Wayne is about ten miles further than via of the air line road. The distance from Chicago to Pittsburg is 465 miles; from Chicago to Cincinnati 326 miles; from Chicago to Cleveland 353 miles; and from Chicago to Toledo 241 miles. This road being under the same management as the Pennsylvania, is now the longest route of uninterrupted railway in the country—being 824 miles. The freight between Philadelphia and Chicago will be about \$4 per ton less than from New York, and \$6 per ton less than the freight from Boston to that point. Baltimore, by the Northern Central Railroad, connecting at Harrisburg with the Pennsylvania Central, has all the advantages of this completed line of railroad to Chicago.

**Ohio Canals.**

The following is a comparative statement of receipts and disbursements on account of the Ohio Canals for the fiscal years ending November 15th:

RECEIPTS.	1857.	1858.
Ohio Canal.....	\$145,152 39	\$101,606 59
Miami and Erie Canal.	148,344 65	146,969 27
Muskingum Improvement Canal.....	15,097 52	17,308 88
Hocking Canal.....	15,927 11	16,671 61
Walhonding Canal....	256 40	472 86
Western Reserve and Maumee Road.....	5,733 16	2,272 68
Total Receipts....	\$330,511 73	\$285,301 29
Disbursements for same time.....	309,263 36	383,007 08
	\$21,248 35	\$97,706 79
Decrease in receipts from 1857.....	\$45,210 44	
Increase in disbursements over 1857..	73,743 73	
Loss over 1857.....	\$118,954 17	

**Baltimore and Ohio Railroad.**

The thirty-second Annual Report of the Directors to the stockholders of the Baltimore and Ohio Railroad contains a full and detailed statement of the transactions of the road for the year ending September 30, 1858.

We give below an abstract commencing with the MAIN STEM.

The gross earnings of the main stem have been \$3,856,485 79, a decrease of \$760,518 16, compared with the preceding year, but an increase over the fiscal year of 1855 of \$145,031 94.

The working expenses have amounted to \$2,531,199 29, being 65.63 per cent. upon the gross earnings, an increase, compared with the previous year, of 5.84 per cent.

Notwithstanding the transfer to the Northwestern Virginia Company of a large portion of the tonnage received and shipped by the Ohio river, yet the increase in the through merchandise, flour and stock trade has been so marked as to more than compensate for all deficiencies, except of the coal trade.

The reduction in local traffic is readily explained by the light crops and unusual scarcity of money prevailing throughout the region traversed by the road.

The quantity of coal transported for the fiscal year, terminating October 1st, 1857, was 530,116 tons, and the revenue derived therefrom \$1,570,000. For the past year but 332,797 tons have been carried, and the receipts from this source have diminished to \$865,000. Since the reduction in the tariff, on the 1st of March last, of fifty cents per ton, 240,000 tons have been transported;—the difference on the freight of which has amounted to \$120,000.

In comparing the balance sheet of September 30th with the financial condition of the company, as presented at the corresponding date of 1857, it will be observed that the following payments have been made, viz:—

For Loan No. 1.....	\$5,820 00
For increase of Sinking Funds.....	253,529 72
For reduction of floating debt:	
September 30, 1857.....	\$820,898 78
Do. 1853.....	284,653 79
	536,244 99
Making.....	\$795,594 71

And the subjoined sums have been expended in the respective items of capital, viz:

Cost of road (chiefly arching tunnels).....	\$303,735 00
Second track.....	58,903 84
Rolling power.....	22,575 55
Real estate.....	3,512 10
	388,726 49

And exhibiting a total of.....\$1,184,321 20

The additional advances to the Northwestern Virginia road have produced a balance of \$1,478,795 74 for the year of \$371,111 75.

During the twelve months \$592,227 82 of the city loan have been received, which embraced \$174,866 for expenditures in arching tunnels, and for double track, in August and September of the preceding fiscal year. Ten per cent. of the gross amount, viz:—\$59,222 78 was deposited with the Register of the city, to be invested for the sinking fund.

The remaining bonds of 1854, viz: \$23,668, not yet presented for payment, have been called in absolutely, and cease to bear interest after this date. The first mortgage loan for \$1,000,000, contracted for the Washington branch, will thus be liquidated in full, and the loan maturing in 1867, hereafter ranks as the first mortgage security upon the property of the Company.

The dividends upon the stock held by the Company in the Washington branch, and rent, have amounted to \$101,512.

The profit and loss account shows again for the fiscal year \$618,065.

**WASHINGTON BRANCH.**

The revenue for the fiscal year has amounted to \$469,422 92, an increase of \$14,963 08 over the previous year, and the expenses to \$202,453 04, being 43 $\frac{1}{2}$  per cent., leaving net \$266,969 28.

A semi-annual dividend of 4 $\frac{1}{2}$  per cent. was declared in October, and the same in April last. A similar dividend for the past six months has been declared.

The amount paid the State of Maryland, as capitation tax on passengers, is \$68,415 02, being more than one-fourth of the net earnings.

**NORTHWESTERN VIRGINIA RAILROAD.**

The revenue of this road for the fiscal year has amounted to \$248,005 06, and the working expenses to \$253,252 79 or 102.12 per cent.

The report of the Master of Road presents the outlays, required also by the unfinished condition of the road, that have been directly charged to construction. The amount is 55,121 06, which has been expended in securing tunnels, additional railway track, depot accommodations, water and fuel stations, etc.

The aggregate revenue of the main stem, Washington branch, and Northwestern Virginia road, amounts to \$4,573,912 77, being a decrease from the preceding year of \$571,920 29.

The expenditures have been—

For repairs of railway.....	\$829,143 02
Do. locomotives and cars..	621,028 60

During the year 8,881 tons of rail have been used, relaying 92 $\frac{1}{2}$  miles of the main stem with new iron. This is the largest quantity ever placed in the track for the same period.

The number of locomotive engines and cars has been fully maintained. Among the charges to repairs have been the cost of one new coal-burning passenger engine and of re-building twenty-eight engines and thirty-seven burthen cars. One hundred and sixteen engines have also been thoroughly repaired.

The Board have the gratification of announcing the most important event in the history of the Company since the opening of the road to the Ohio river,—an event assuring its increased success and permanent interest. *On the date of the presentation of this report, the arching of every tunnel on the main stem of the Baltimore and Ohio Railroad will be completed.*

The expenditures on this account, during the year, have been \$228,760 92. The Master of Road, in describing the character of the work, states that "the arching of these tunnels has been done in the most substantial manner, the stone side walls being of range rock work, well laid in cement, and all the arches of hard brick also in cement, except 1,162 lineal feet of iron in Kingwood Tunnel, above which is placed a reliable arch of stone masonry. Neither pains nor expense have been spared to cause this work to compare favorably with any similar structure in the world, and make it endure as long as the mountains themselves shall remain." Great energy, perseverance and ability have been exhibited in the rapid and successful prosecution of this service, and the Board tenders its cordial acknowledgment to Mr. John L. Wilson and his assistants, under whose auspices it has been so satisfactorily accomplished.

During the year 3 miles and 4,503 feet of second track have been laid, at desirable points, costing \$58,903 84.

Much attention has been paid to the introduction of coke, and coal as fuel for the passenger engines, and special attention is requested to the report of the Master of Machinery on this important subject. The results have proved highly satisfactory—the engines operating very economically and efficiently. Experiments with fuel, made with the same engine, running with mail and express trains, hauling in each case five cars, resulted as follows:

With wood, 7.8 cent, cost per mile run.	
With coke, 5.6 do. do.	
With coal, 3.6 do. do.	



Fourteen of the passenger machines are now consuming mineral fuel, and the Master of Machinery recommends the alteration of others as soon as the large accumulation of wood on hand is sufficiently reduced to render it advisable.

The great economies to be thus affected must attract the attention of managers of railroads generally, and add largely to the consumption of bituminous coal.

Among the interesting facts presented in the report of the transportation department, is the statement in reference to the shipments of flour—the aggregate of which proves to be 1,004,594 barrels—presenting the largest quantity of this article ever transported by the Company for any year, and an excess on the main stem, over the preceding year of 194,080 barrels.

The relations of the Company with its connecting lines have continued of close and friendly character. The most reliable and largest contributor to the trade of the road and the city, among its western connections, has been the Central Ohio road, the improved management and condition of which have given increased satisfaction in the promptness and regularity of its transportation of freight and passengers.

The Marietta and Cincinnati Railroad was seriously damaged by freshets for some time, which disappointed that Company in the extent of its business. It has been recently improved, and is again operating successfully. With the completion of a road—which may be anticipated during the coming year—extending from its present line to a point near Parkersburg, a large increase of traffic with that company will unquestionably be realized. This improvement will also produce a most beneficial effect upon the business and revenue of the Northwestern Virginia Road.

The Board has firmly adhered to the conservative and valuable policy of maintaining the sinking funds.

The aggregate bonded debt of the Company is now \$10,668,645 05  
And the aggregate of Sinking Funds is 937,284 13

as follows:

For Ground Rents on Camden Station. \$46,941 60  
" City Five Million Loan 619,675 81  
" Mortgage Debts 270,666 66  
\$937,284 13

The fund for redemption of the million loan has been merged in that for the mortgage debts generally, and its increment of interest has been duly invested.

On the 17th December, 1856, the Board adopted the following resolution:

*Resolved*, That the sum of \$113,333 annually, beginning with the year 1857, be, and the same is hereby, appropriated and set apart as a sinking fund for the redemption of the mortgage debt of the Company, which said amount constitutes the iron bonds due at that date, and maturing respectively in 1858, '59, and '60, after which the said sum is to be re-invested annually in said mortgage debt. All interest that may, from time to time, accrue thereon, shall be invested in any of the debt aforesaid, when it can be obtained at or below par.

If this important addition to sinking funds, being about one per cent. annually upon the capital, temporarily withheld from the shareholders, be maintained, with its accumulations of interest, it will absorb the entire mortgage debts of the Com-

pany in the year 1879, if the average cost of the bonds shall be par, or in the year 1877, if the average cost shall be 90 per cent.

The unexpected requirements of the Northwestern Virginia road alone produced the large floating debt of the Company, which, in the early part of the past year, exceeded one million dollars. The Board has deemed it the soundest policy to defer dividends until relieved from its entire floating debt. The amount, being now reduced to \$284,653 79, will be liquidated at an early period.

It is a source of gratification to the Board to announce its decided conviction that with economical and judicious management, the payment of cash dividends will be resumed in April next, and to express their entire confidence in the capacity of the company to maintain from its earnings the payment of regular semi-annual dividends from that date.

*Statement of the Liabilities and Assets of the Baltimore and Ohio R. R. Co., on 30th Sept., 1858.*

LIABILITIES.	
Stock held by individuals.....	\$5,425,900 00
Do. City of Wheeling.....	500,000 00
Do. City of Baltimore.....	3,500,000 00
Do. St. of Md.....	685,600 00
Scrip not funded.....	7,402 00
Preferred Stock, (State five per cent. Sterling bonds).....	3,000,000 00
Loan redeemable 1854, not yet presented.....	83,668 00
Loan redeemable 1867.....	1,000,000 00
Bonds given for iron.....	453,333 32
Loan redeemable 1875.....	1,128,500 00
Do. 1880.....	700,000 00
Do. 1885.....	2,500,000 00
City Loan—amount received.....	4,886,811 73
Open accounts.....	44,161 62
Washington Branch Road.....	147,855 73
Bills payable.....	284,653 79
Profit and loss.....	5,052,275 07
	\$29,400,161 26

ASSETS.	
Cost of road.....	\$18,470,944 93
Rolling power.....	3,538,360 03
Second track.....	1,548,340 96
Real estate.....	1,244,999 29
	\$24,802,645 21

Bonds of the Central Ohio Railroad Company.....	400,000 00
Central Ohio R. R. Co.....	44,138 77
Western Telegraph Company.....	2,191 27
Stock of the Pittsburgh and Connellsville R. R. Co.....	35,000 00
Bonds of the City of Baltimore.....	13,955 50
Northwest. Virg. R. R. \$996,813 32	
Bills receivable for its notes, etc.....	476,982 42
	1,473,795 74

Wellersburg & West Newton Plank Road Company.....	6,050 00
Washington Branch Road.....	1,016,803 00
Sinking Fund—For the redemption of the	

Five Million Loan ..	\$619,675 81
Do. Mortgage Debts..	270,666 66
Do. Ground Rents on Camden station.....	46,941 66
	937,284 13

Bills receivable.....	10,623 73
Cash for disbursement.....	13,245 78
Outstanding dues.....	27,715 71
Uncollected revenue.....	304,752 94
Machinery department.....	173,596 70
Road do.....	62,173 73
Marietta and Cincinnati R. R. Co.....	4,006 69
Treasurer.....	72,185 41
	\$29,400,161 26

*Statement of the Revenue and Working Expenses of the Baltimore and Ohio Railroad Company, for the fiscal year ending on the 30th Sept., 1858.*

Revenue.....	\$3,856,485 79
WORKING EXPENSES:—	
General expenses.....	\$34,685 35
Losses by accidents, etc..	21,357 89
Expenses of transportation.....	788,047 25
Repairs of railway.....	329,143 02
Do. water stations.....	11,677 90
Do. depots.....	43,061 93
Do. bridges.....	24,991 29
Do. telegraph.....	3,413 87
Do. stationary machinery.....	38,310 84
Watching cuts.....	32,873 30
Watching tunnels.....	2,293 35
Watching bridges.....	7,441 30
Pumping water.....	10,357 18
Repairs of locomotives.....	372,849 92
Do. dump cars.....	1,877 18
Do. passenger cars.....	52,213 06
Do. burden cars.....	194,088 44
Cleaning engines and cars.....	59,662 76
Contingent expenses of machinery department.....	2,850 60
Repairs of snow plows.....	2 79
	2,531,199 29

Excess of Revenue over Working Expenses.....\$1,325,286 50  
Working Expenses, 65.63 per cent.

The Reports of the Master of Transportation, Master of Road and Master of Machinery are very full and interesting; but we are obliged to postpone their publication until next week.

#### Mississippi Central and Tennessee Railroad.

We have the pleasure of announcing that the Mobile and Ohio Railroad has made its connection from Columbus, below Cairo, with one of the Memphis railroads, and that the line is formally opened for travel between Columbus and Memphis—the time being less than twelve hours. The Memphis *Avalanche* announces the first arrival by that route as follows:

A number of passengers came through from Columbus, Kentucky, to this city, on Saturday last, by railroad, making the trip from Cairo to Memphis in thirteen hours. This new connection is formed by the Mobile and Ohio railroad to Columbus, Kentucky, which was formally opened on Saturday. The distance between Columbus and Cairo by river is but twenty miles, and arrangements have been made for the establishment of a line of boats between the two points. When the connection shall be made permanent, the travel over that route will, doubtless, be very considerable.

#### Missouri State Bonds.

The Treasurer of the State of Missouri has issued the following notice to the holders of State Railroad bonds informing them that the interest will be promptly paid at the Bank of Commerce in this city on all bonds issued for railroad purposes. In this connexion we are informed that the Pacific Railroad Company have made arrangements to pay the interest on the bonds issued for that road:

#### To Holders of Missouri Railroad Bonds.

TREASURY DEPARTMENT,  
Treasurer's Office, Missouri,  
City of Jefferson, November 24, 1858.  
Notice is hereby given that the semi-annual interest falling due on the first of January next, on the bonds issued by the State of Missouri to the several Railroad Companies therein, will be promptly paid at maturity, at the Bank of Commerce in the city of New York.

A. W. MORRISON, State Treasurer.

### How Third-Class Passengers are Treated in England.

The *Preston Guardian* has the following:—"We cannot understand the obstinacy of railway companies in resisting what every man's sense of propriety and decency insists upon, and which could be conceded with a mere shadow of expense. You see a lamp burning in a first-class carriage with two passengers; next to it, another first-class, with a capital light and no passengers; then a second-class compartment with perhaps three passengers, or perhaps none, well lit up; and then come the pitiful third-class passengers, often crammed with people, and frequently not the quietest or best behaved, but not a spark of light is afforded for these. Can any one defend such a shameful partiality—such a wanton disregard of social decency? It is an ungrateful return to

their best customers; for we hesitate not to say, without referring further from home, that the handsome dividends of the Lancaster, Preston and Carlisle lines are, to a considerable extent, drawn from the despised and neglected third-class passengers. We wonder that the importance of lighting all the carriages has so far escaped our legislators, but it cannot do so long. We remember the time when the third-class people were compelled to stand like sheep in uncovered trucks, and not allowed even to take a bundle with them. The public feeling of disgust frowned down such harsh and absurd regulations, and it will ultimately do the same in this case. We have been led to renew our remarks this week by the statement we have received from a young woman who went with the cheap trip to Leeds, on Tuesday week, to see the Queen. The return train started very punctually at seven o'clock, but did not reach Preston till

five minutes to one. We don't complain of the delay on the road, for that might be unavoidable, but we do utter our strongest protest against the huddling together a mixed company of males and females in these carriages, all in darkness to remain in this shameful, comfortless state till one o'clock in the morning. In one carriage, she informs us, a party managed to purchase a candle, and being fortunate enough to meet with a 'pop bottle' among the company, this ingenious expedient considerably ameliorated their condition. This simple contrivance shows, if the railway companies deem it too much trouble for their servants to mount the third-class carriages and suspend lamps in them from the tops, that were they to fix a single plain lamp at each end of the carriages, inside, or even at one end, after the manner of some of the omnibuses, it would be a great improvement, and would satisfy most people."

### Statistics of the Railways of the United Kingdom.

Name of Railway Company.	Recpts from Traffic dur'g the y. 1857, as furnish'd by the Railway Co's to the Board of Trade.	Work'g Exp's dur'g the year, from the half-yearly statements of the Co's.	Total of Working & Preference Charges.	Amount of Surplus Income available for Dividend.	Proportion which the Recpts from Traffic, less the Working Exp's dur'g the y'r, and the Preference & Guaranteed Charges, & Int't on Loan, on Dec. 31, 1857, bear to the Ord'ry Share Capital rais'd on the above date.	Proportion which the Recpts, less Work. Exp's dur'g the y'r bear to the Total Capital rais'd on Dec. 31st, 1857.	Proportion of the Working Exp'diture to the Recpts from Traffic.
	£	£	£	£	Per cent.	Per cent.	Per cent.
<b>ENGLAND AND WALES:—</b>							
Birkenhead, Lan. and Chesh. Junction .....	129,267	68,595	87,776	41,491	1.99	2.45	50
Blyth and Tyne .....	65,520	44,293	52,163	13,357	7.72	7.56	68
Bristol and Exeter .....	388,215	162,495	240,715	97,500	4.71	4.45	47
Carlisle and Silloth Bay .....	3,655	2,398	2,783	872	1.16	1.52	66
Chester and Holyhead .....	253,555	127,865	235,696	17,359	0.85	2.97	62
Cockermouth and Workington .....	11,908	5,693	8,772	3,534	4.69	2.67	48
East Anglian .....	53,037	24,394	52,630	407	0.04	1.85	
Eastern Counties .....	930,824	419,862	757,185	173,639	2.97	3.69	
Eastern Union Section .....	186,186	88,850	151,256	34,930	3.43	3.32	50
Norfolk Section .....	186,186	88,850	145,946	40,240	4.04	4.37	
East Lancashire .....	323,405	138,137	219,380	104,025	4.48	4.65	48
Furness .....	68,222	32,481	46,023	22,199	9.24	6.63	48
Fleetwood, Preston and West Riding Junction ..	4,492	2,079	4,329	163	0.10	1.16	46
Great Northern .....	1,245,221	641,448	1,022,266	222,955	4.65	4.43	52
Great Western .....	1,819,016	842,795	1,715,119	103,897	1.17	3.47	53
Hull and Holderness .....	12,301	6,879	8,312	3,898	3.73	3.98	52
Kendal and Windermere .....	10,631	4,380	8,934	1,697	1.51	3.15	41
Lancashire and Yorkshire .....	1,257,981	511,908	806,092	451,889	4.70	4.78	43
Lancaster and Carlisle .....	324,363	129,660	140,132	184,231	8.93	8.43	40
Llanelli and Dock .....	20,390	13,198	19,055	1,335	0.62	2.28	65
London and Blackwall .....	76,478	35,578	50,986	25,492	1.94	2.47	46
London and North-Western .....	3,530,395	1,773,122	2,426,302	1,104,093	4.68	4.67	51
London and South-Western .....	830,531	383,310	506,517	324,014	4.51	4.52	45
London, Brighton and South Coast .....	751,860	350,136	521,175	230,505	4.79	4.77	47
Mansfield, Sheffield and Lincoln .....	528,551	249,783	474,011	54,540	1.33	3.28	50
Maryport and Carlisle .....	53,378	27,975	41,283	12,095	7.23	5.31	52
Midland .....	1,753,758	770,721	1,268,818	484,940	4.84	4.75	44
Monmouthshire .....	113,584	67,805	98,828	14,766	4.07	4.56	60
Newcastle-upon-Tyne and Carlisle .....	179,221	76,470	104,285	74,936	6.68	5.94	43
Newport, Abergavenny and Hereford .....	58,156	34,228	67,387	*9,231	....	2.03	59
North and South-Western Junction .....	6,270	2,404	3,356	2,919	3.68	3.93	38
North Devon, (leased to Mr. Brassey) .....	23,709	....	....	....	....	....	..
North-Eastern .....	1,834,805	791,133	1,212,991	621,814	5.33	5.03	43
North London .....	139,134	66,953	81,559	57,575	6.27	5.80	48
North Staffordshire .....	253,571	125,469	180,749	72,722	2.57	3.18	49
North-Western .....	49,267	27,255	44,417	4,850	0.61	1.89	..
Oxford, Worcester and Wolverhampton .....	215,397	102,992	219,514	*4,117	....	2.82	48
Port Carlisle Dock and Railway .....	5,750	2,983	8,959	*3,209	....	1.45	52
St. Helen's Canal & Railway, (Railway traffic only)	61,949	29,187	70,354	*8,405	....	2.85	57
Shrewsbury and Hereford, (leased to Mr. Brassey)	77,200	....	....	....	....	....	..
Shropshire Union .....	47,209	32,307	32,307	14,902	1.63	1.63	68
South Devon .....	135,721	69,808	100,857	34,864	2.37	3.12	51
South-Eastern .....	994,430	489,818	741,630	252,800	3.26	3.79	49
South Staffordshire, (leased to Mr. MacLean) ..	107,476	....	....	....	....	....	..
South Wales .....	351,589	223,653	309,564	42,025	1.17	2.86	64
South Yorkshire .....	81,981	43,869	61,251	20,730	3.42	3.85	53
Stockton and Darlington .....	386,426	198,136	306,604	79,822	11.05	6.82	51
Taff Vale .....	222,215	122,498	158,204	64,011	10.63	8.25	55
Vale of Neath .....	79,742	39,797	47,956	31,786	4.96	4.76	50
Warrington and Stockport .....	13,224	8,083	10,877	2,347	1.36	2.19	..
West Cornwall .....	33,257	21,491	28,456	4,801	1.35	2.28	65
West Hartlepool Harbor and Railway .....	140,891	70,430	134,845	6,046	0.65	3.23	50
Whitehaven and Furness Junction .....	23,004	11,277	19,838	3,166	1.38	3.19	49
Whitehaven Junction .....	23,646	13,962	18,436	5,710	5.24	5.02	59
* Deficiency.	20,428,148	9,618,392	15,076,480	5,168,470	Average .... 3.88	4.26	48



Name of Railway Company.	Rec'pts from Traffic during the y. 1857, as furnish'd by the Railway Co's to the Board of Trade.	Work'g Exp's dur'g the year, from the half-yearly statements of the Co's.	Total of Working & Preference Charges.	Amount of Surplus Income available for Dividend.	Proportion which the Rec'pts from Traffic, less the Working Exp. dur'g the y'r, and the Preference & Guaranteed Charges, & Intst on Loan, on Dec 31, 1857, bear to the Ordinary Share Capital rais'd on the above date.	Proportion which the Rec'pts, less Work. Exp. dur'g the y'r bear to the Total Capital raised on Dec 31st, 1857.	Proportion of the Working Expenditure to the Rec'pts from Traffic.
	£	£	£	£	Per cent.	Per cent.	Per cent.
<b>SCOTLAND:—</b>							
Caledonian .....	709,300	292,983	540,009	169,291	5.16	4.84	41
Caledonian and Dumbarton Junction .....	13,447	6,415	6,415	7,032	2.61	2.61	48
C ieff Junction .....	5,179	2,635	3,235	1,944	6.74	6.24	51
D'eeside .....	13,641	6,061	7,598	6,048	6.20	5.71	46
Dundee and Arbroath .....	32,514	16,689	22,235	10,279	5.14	4.92	51
Dundee and Perth and Aberdeen Railway Junct..	55,286	26,378	52,128	3,158	1.05	3.17	48
Edinburgh and Glasgow .....	292,967	152,297	236,245	56,542	2.35	3.07	52
Edinb., Perth and Dundee and Scottish Central ..	327,864	143,898	255,363	72,501	3.18	3.68	44
Forth and Clyde Junction .....	13,386	9,501	12,501	885	0.83	2.34	71
Glasgow and South-Western .....	375,641	157,302	232,975	142,666	4.98	4.70	42
Great North of Scotland .....	68,981	22,916	50,622	18,359	6.37	5.22	33
Leven .....	4,398	2,521	2,746	1,652	7.18	6.71	57
Monkland .....	78,434	31,152	46,935	31,499	8.78	6.80	40
Morayshire .....	3,418	2,013	2,745	673	2.78	3.63	59
North British .....	271,255	114,761	205,836	65,419	2.61	3.50	41
Peebles .....	9,832	6,194	7,914	1,918	2.83	3.49	63
St. Andrew's .....	3,640	2,084	2,296	1,344	6.40	5.92	58
Scottish North-Eastern .....	189,550	93,960	159,021	30,529	1.84	3.25	49
	2,468,733	1,090,450	1,846,999	621,734	Average.. 3.71	4.09	44
<b>IRELAND:—</b>							
Belfast and Ballymena .....	57,615	27,937	35,741	21,874	3.98	4.14	48
Belfast and County Down .....	15,274	5,921	10,553	4,721	1.81	2.62	39
Cork and Bandon .....	14,548	6,924	14,527	21	0.01	2.30	47
Cork, Blackrock and Passage .....	12,223	5,239	7,053	5,170	4.35	4.44	43
Dublin and Belfast Junction .....	62,541	23,018	34,225	28,316	3.27	3.62	37
Dublin and Drogheda .....	80,922	32,380	55,565	25,357	4.81	4.75	40
Dublin and Kingstown .....	58,425	20,277	23,077	35,348	10.55	9.41	33
Dublin and Wicklow .....	30,809	16,400	30,857	*48	....	1.92	49
Dundalk and Enniskillen .....	21,630	13,822	26,336	*1,706	....	2.46	56
Great Southern and Western .....	368,874	143,054	221,882	146,992	5.00	4.59	39
Londonderry and Enniskillen .....	37,846	19,766	42,883	*5,037	....	3.02	52
Midland Great Western .....	181,318	57,435	79,675	101,643	7.96	7.05	31
Newburyport and Armagh .....	1,987	2,066	2,066	*79	....	....	..
Newburyport, Warrenpoint and Rostrevor .....	3,987	2,031	3,458	439	0.43	1.45	52
Ulster .....	75,330	28,638	38,201	37,129	5.48	5.25	38
Waterford and Limerick .....	58,829	30,814	59,537	*708	....	2.47	52
Waterford and Tramore .....	5,228	3,049	3,733	1,495	3.19	3.47	47
	1,090,296	438,771	689,369	408,505	Average.. 4.29	4.38	38
<b>Total for United Kingdom. ....</b>							
	23,987,177	11,147,613	17,612,848	6,198,709	....	....	..

The percentage proportion which the preference and loan capitals have borne to the ordinary share capital, and the percentage which the net receipts bear to the money invested, as compared with the average rate of dividend on the ordinary share capital, are shown by the subjoined table:—

1857	Yr.	Ordinary Capital.	Preference Capital and Loan.
Per cent.	63	Per cent.	47
Per cent.	52	Preference.	
Per cent.	25	Loan.	
Per cent.	4.06	Proportion of Gross Receipts, less Working Expenses, to Total Amount of Capital and Loan.	
Per cent.	4.67	Average Interest on Preference Capital and Loan.	
Per cent.	3.30	Average Rate of Dividend of the Ordinary Share Capital.	

It will thus be seen that the preferential and loan capital invested in railways is 47 per cent. of the whole capital, and that the interest which has to be paid upon the preferential and loan capital averages £4 13s. 6d. per cent. (4.67). The net receipts on railways give an average interest on the whole capital invested of 4 per cent., but the preferential charges reduce the interest on the ordinary capital to £3 12s. per cent. (3.60).

#### Railroads in New Jersey.

The Newark *Mercury* states that applications will be made to the New Jersey Legislature for the following acts:

For an act of incorporation to authorize the construction of a railroad between Newark and Orange to be used with horse power, (with the privilege of building one or more branches,) with a capital of \$100,000, and with power of increasing the same; for an act of incorporation to authorize the construction of a railroad or railroads in the city of Newark and the township of Orange, with a capital of \$100,000, with power to increase the same to \$300,000, to be used with horse or steam power, as shall be decided by the citizens of the township through which it passes, with authority to make such branch roads within the city of Newark and the township of Orange as shall be deemed advisable and be approved by said city or township, and privilege to intersect any railroad now existing, or which may be erected in said or township; for an extension of the time for commencing and completing the Newark and Springfield Railroad;

and for a supplement to the act incorporating the New York, Elizabethtown and Morris Railroad, authorizing the said road to run to any points in the city of Elizabeth, or Orange, or Newark.

#### Debt of South Carolina.

The following is a statement of the public debt proper of this State, at the close of the fiscal year, September 30, 1858, as given in the report of the Comptroller-General:

Three Per Cent. State Stock .....	\$66,602 77
Five Per Cent. State Stock .....	35,512 93
Five Per Cent. Bonds (sterling), Fire Loan .....	501,111 12
Six Per Cent. Stock, Fire Loan, 1838. ....	739,516 14
Six Per Cent. Bonds, Blue Ridge Railroad .....	800,000 00
Six Per Cent. Bonds, New Capitol .....	500,000 00
Six Per Cent. Stock, New Capitol .....	556,000 00
	\$3,192,742 94

The amount due for surplus revenue, amounting to \$1,054,422 09, is not set down here among the items of the public debt proper, as there is no probability that the State will ever be required to refund it.

The bank of the State, during the fiscal year redeemed and cancelled the following portions of the public debt:

Five Per Cent. Sterling Bonds, Fire Loan .....	\$406,666 07
Six Per Cent. Stock, 1838, Fire Loan. ....	22,574 98

## Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

NAME OF COMPANY.	Length of Road	Capital paid in.	Debt	Total cost of road & equip't.	Gross Earnings for last official year.	Net Earnings for do.	Dividend for do.	Price of Shares.	NAME OF COMPANY.	Length of Road	Capital paid in.	Debt	Total cost of road & equip't.	Gross Earnings for last official year.	Net Earnings for do.	Dividend for do.	Price of Shares.	
Atlantic & St. Lawrence	149	2,494,900	3,482,000	6,923,941	545,792	160,224	6	---	Brunswick and Florida, Ga.	30	151,887	463,648	538,649	In progr.	---	---	---	---
Androscog & Kennebec	55	457,909	1,835,309	2,210,947	159,513	88,368	none	---	South. Western	143	1,399,100	441,292	2,269,323	865,214	208,771	9	---	---
Kennebec & Portland	72	1,107,526	1,763,738	2,871,264	213,255	---	---	---	Tennessee and Alabama	30	399,754	626,889	679,906	53,775	29,406	---	---	---
Port. Saco & Portland	31	1,396,400	---	1,396,373	253,717	120,909	6	91	Tennessee and Mississ.	04	757,540	611,812	1,161,152	161,001	99,888	---	---	---
Boston, Concord & Montreal	91	2,000,000	1,104,686	3,104,686	329,767	174,025	10	---	Memphis and Charleston	257	2,228,177	3,495,288	5,672,470	642,022	834,604	---	---	---
Onondaga	35	1,000,000	822,112	1,822,112	317,687	113,077	6	46	Mobile and Ohio	100	6,784,819	2,066,459	10,701,428	554,382	278,428	---	---	---
Concord	82	3,068,400	406,288	3,068,400	365,880	186,996	4	44	Miss. Central	205	1,576,474	926,706	2,503,098	115,079	---	---	---	---
Northern, N. H.	91	1,000,000	800,000	1,784,146	177,589	73,401	none	---	Southern (Miss.)	82	1,000,000	1,400,000	2,400,000	264,255	150,789	---	---	---
Concord & Passumpsic Riv.	117	2,233,376	4,158,765	6,392,141	332,713	41,688	none	---	N.O. Opelousas & G.W.	80	2,800,000	760,000	3,577,526	284,178	127,450	---	---	---
Rutland & Burlington	47	1,350,000	---	1,350,000	138,095	---	---	---	N.O. Jackson & N.	130	4,035,000	1,815,610	3,500,000	189,003	---	---	---	---
Vermont Central	132	5,000,000	5,276,299	10,276,299	705,833	127,389	---	---	Vicksburg, Shreveport & Tex.	21	883,768	109,285	992,051	In progr.	---	---	---	---
Boston and Lowell	25	1,330,000	438,920	1,768,920	241,251	435,863	6	80	East Tennessee and Ga.	111	1,192,974	1,735,699	2,703,429	227,363	104,992	---	---	---
Boston and Maine	74	4,076,974	---	4,076,974	770,802	305,502	6	99	East Tennessee and Va.	130	626,075	1,728,664	3,208,138	61,344	39,082	---	---	---
Boston and Providence	43	3,160,000	239,720	3,399,720	584,176	245,194	6	92	Nash. and Chattanooga	159	2,263,905	1,632,793	3,896,703	641,552	219,268	---	---	---
Boston and Worcester	44	4,500,000	599,974	5,099,974	1,019,149	388,613	6	93	Covington & Lexington	98	1,834,850	3,065,917	4,091,604	426,408	220,906	---	---	---
Cape Cod	47	1,691,110	275,772	1,966,882	267,710	65,096	3	40	Lexington and Frankfort	29	430,055	156,899	658,256	95,807	45,717	6	---	---
Connecticut River	60	2,583,400	2,441,873	5,025,273	616,156	272,479	46	---	Lexington and Danville	13	694,444	71,000	765,500	In progr.	---	---	---	---
Eastern, Mass.	67	3,540,000	100,000	3,640,000	668,974	260,833	6	98	Louisville and Frankfort	65	741,059	625,216	1,502,095	245,750	109,059	6	---	---
Fitchburg	21	500,000	---	500,000	188,925	27,827	6	---	Atlantic & Gt. Western	---	866,939	77,294	613,231	In progr.	---	---	---	---
N. Bedford and Taunton	77	3,015,100	260,100	3,275,200	683,357	305,140	6	98	Bellefontaine and Ind.	118	1,874,395	1,315,237	2,998,392	348,552	120,336	none	---	---
Old Colony and Fall River	69	2,232,541	1,019,148	3,251,689	240,133	52,267	none	8	Clev. Col. and Cincin.	141	4,746,211	90,400	4,752,820	1,149,741	514,740	9	94	---
Vermont and Mass.	155	5,150,000	6,839,080	11,989,080	2,117,982	899,763	8	107	Cleveland and Toledo	200	3,333,712	4,225,555	7,193,016	980,282	433,790	---	---	---
Worcester and Nashua	46	1,141,000	205,565	1,346,565	216,888	82,720	4	46	Clev. and Mahoning	65	---	---	628,533	In progr.	---	---	---	---
Providence and Worcester	43	1,510,020	300,000	1,810,020	344,773	155,044	7	81	Clev. and Pittsburg	133	2,780,744	3,043,992	5,537,466	581,877	309,518	---	---	---
Hartford and N. Haven	72	2,356,000	944,000	3,299,000	769,065	340,835	10	122	Clev. P. & Ashtabula	95	3,000,000	1,495,548	3,955,230	1,251,539	581,454	15	---	---
Hartford, Prov. and Fishkill	122	1,936,246	2,132,692	4,068,938	273,428	112,325	none	---	Cin. Wilm. & Zanesville	131	2,421,176	3,782,040	6,096,210	223,506	30,285	---	---	---
Housatonic	57	1,031,800	624,244	1,656,044	237,416	114,237	---	---	Columbus and Xenia	55	1,490,450	149,000	1,582,475	403,212	181,688	10	---	---
Naugatuck	62	2,980,836	2,328,240	5,309,076	1,157,055	254,569	3	40	Dayton, Xen. & Belpre	63	437,838	422,658	860,496	In progr.	---	---	---	---
N. York and N. Haven	60	738,258	761,462	1,500,000	88,007	30,318	none	---	Dayton and Michigan	140	1,076,602	393,011	1,185,826	In progr.	---	---	---	---
N. Haven and N. London	66	610,500	1,062,000	1,672,500	120,571	61,644	none	---	Dayton and Western	35	310,000	700,481	1,036,173	125,940	68,255	---	---	---
N. London, W. & Palmer	66	1,123,300	724,188	1,847,488	265,417	44,547	---	---	Baton and Hamilton	42	469,763	892,689	1,176,163	140,936	50,008	---	---	---
Norwich and Worcester	32	439,005	1,625,098	2,064,098	117,716	9,904	---	---	Little Miami	65	2,981,282	1,266,000	3,925,157	775,442	290,123	10	81	---
Albany Northern	35	643,300	317,353	960,653	192,478	68,333	none	---	Sandusky, Dayton & Cincin.	171	2,697,000	3,368,000	6,065,000	682,614	---	---	---	---
Black River and Utica	100	1,487,874	1,501,183	2,988,957	172,476	68,333	none	---	Central Ohio	138	1,927,907	6,228,650	4,986,822	570,092	164,997	none	---	---
Buffalo, Corn. and N. Y.	92	798,439	2,537,849	3,336,288	288,392	31,896	none	---	Pittsb. Mt. Wayne & Chicago	123	6,247,400	9,832,650	14,279,704	1,546,359	577,787	---	---	---
Buffalo and N. Y. City	99	1,300,000	1,040,000	2,340,000	679,750	355,763	10	---	Pittsb. Mayv. & Cin.	50	371,350	31,000	390,933	In progr.	---	---	---	---
Buffalo and St. Line	47	434,111	922,393	1,356,504	174,089	69,506	---	---	Sand. Mans. & Newk.	127	1,350,000	2,206,357	3,552,357	328,958	164,479	none	---	---
Canandaigua and Elmira	48	1,315,000	2,279,854	3,594,854	1,902,828	688,880	none	11	Scioto & Hocking Valley	56	403,975	609,050	888,858	In progr.	---	---	---	---
Canandaigua & Niagara F.	35	687,000	506,689	1,193,689	135,433	43,649	---	---	Spring, Mt. Vernon & P.	113	1,000,000	950,000	---	In progr.	---	---	---	---
Cayuga & Susquehanna	144	3,758,466	2,360,362	6,118,828	825,311	56,186	none	11	Tol. Wash. & St. Louis	242	2,965,100	7,577,500	10,542,600	Recently opened.	---	---	---	---
Hudson River	144	3,758,466	2,360,362	6,118,828	825,311	56,186	none	11	Cin. Log. and Chicago	255	4,196,676	1,060,125	2,080,433	In progr.	---	---	---	---
Long Island	562	24,182,100	14,492,655	38,674,755	6,523,418	3,041,120	8	83	Evansville & Crawfordsv.	109	988,061	1,270,872	2,158,718	249,868	124,140	---	---	---
New York Central	494	11,000,000	28,031,468	39,031,468	7,424,607	1,454,032	none	12	Ind. and Cincinnati	88	1,686,809	1,564,584	3,029,989	491,743	245,622	7	---	---
New York and Erie	138	5,717,100	4,822,498	10,539,598	1,040,393	234,891	none	12	Indiana Central	66	612,350	1,261,179	1,909,911	368,189	204,685	---	---	---
New York and Harlem	118	1,633,022	4,066,874	5,700,000	520,153	135,754	none	1	Ind. Clev. & Pittsburg	88	835,791	1,071,694	1,826,425	253,19	85,248	none	---	---
Northern, N. Y.	35	303,130	213,025	516,155	149,373	78,764	8	---	Jeffersonville	66	1,014,252	694,000	1,399,676	222,737	94,318	none	---	---
Oswego and Syracuse	35	467,200	294,189	761,389	749,683	---	---	---	Madison and Indianapolis	87	1,647,700	1,336,816	1,205,000	260,214	118,628	none	---	---
Pottsdam and Watertown	25	610,000	140,000	750,000	241,149	82,600	7	---	New Albany and Salem	238	2,535,121	5,281,848	6,643,189	645,827	371,402	none	---	---
Rensselaer & Saratoga	48	600,000	395,600	995,600	71,909	21,089	none	---	Peru and Indianapolis	73	---	---	1,685,809	481,272	206,070	10	---	---
Saratoga and Whitehall	50	768,369	1,578,804	2,347,173	159,484	22,603	none	---	Terre Haute and Ind.	182	1,361,450	2,501,126	3,862,272	1,885,196	850,039	---	---	---
Saratoga & Binghamton	27	437,830	737,079	1,174,909	156,383	55,184	---	---	Chicago and Rock Isl.	173	2,248,000	1,734,318	3,982,318	1,002,426	1,005,167	---	---	---
Troy and Boston	97	1,500,000	700,079	2,200,079	440,290	162,037	3	63	Chicago, Burl. and Quincy	210	4,631,540	3,852,970	8,042,426	1,005,167	81,767	---	---	---
Watertown and Rome	64	1,000,000	1,619,000	2,619,000	243,393	114,632	---	---	Chio. St. Paul & F'd du Lac	178	3,300,000	1,355,000	3,655,000	In progr.	---	---	---	---
Beaumont Delaware	94	3,000,000	11,407,200	14,407,200	1,840,787	694,114	12	17	Galea and Chicago	259	6,656,455	20,314,452	24,587,629	2,293,965	1,192,042	8	73	---
Camden and Amboy	60	3,485,000	1,550,864	5,035,864	117,839	45,542	none	---	Illinois Central	704	1,568,859	2,200,000	6,400,000	---	665,972	7	---	---
Camden and Atlantic	30	3,485,000	788,844	4,273,844	911,611	334,951	10	129	Peoria and Oquawka	181	1,780,295	2,292,403	4,870,586	Recently opened.	---	---	---	---
New Jersey	63	2,000,000	982,835	2,982,835	628,940	367,193	---	---	Ohio & Miss. (W. Div.)	147	3,011,150	1,925,927	6,723,764	823,767	247,757	---	---	---
New Jersey Central	63	1,157,806	340,000	1,497,806	127,765	101,542	3	---	Terre Haute, Alt. & St. Louis	208	3,011,150	1,925,927	6,723,764	823,767	247,757	---	---	---
Morris and Essex	44	1,587,906	600,046	2,187,952	85,000	45,000	---	---	Detroit and Milwaukee	186	588,000	1,128,964	1,966,969	Recently opened.	---	---	---	---
Allegheny Valley	63	1,700,000	1,940,000	3,640,000	219,268	62,450	---	---	Mich. Central	252	6,057,840	8,366,539	12,847,238	2,485,788	764,936	8	52	---
Cataw. W. & Erie	52	1,018,900	213,509	1,232,409	136,463	77,92	---	---	Mich. South'n & N. Ind.	475	6,874,400	10,469,65	19,336,054	2,309,487	644,511	21	---	---
Cumberland Valley	170	3,284,772	6,194,551	9,479,323	816,768	41,339	10	40	Green Bay, M. & Ch.	238	4,440,673	6,010,553	8,051,255	882,813	372,691	12	---	---
Dol. Lack. & Western	20	1,000,000	---	1,000,000	---													



## Railroad Bonds.

NAMES OF COMPANIES. (The following quotations are ex- interest.)	Amount of Loan.	Description of Bonds.	Rate Int.	Interest pay- able.	Where payable.	Due.	Offered.	Asked.
Alabama and Tennessee River	\$338,000	1st mortgage, convertible	7	1st Jan. 1st July	N.Y.	1872	85	
Buffalo and State Line	500,000	Do, convertible	7	April, October	"	1866	92 1/2	96
Bellefontaine and Indiana	600,000	Do, convertible	7	Jan'y, July	"	1866	85	
Do, do	200,000	Real estate, convertible	7	Jan'y, July	"	1868		
Do, do	200,000	Income, guar. Cl. Col. & Cin.	7	Feb'y, August	"	1869		
Central Ohio	1,250,000	1st mort. conv. east. sec.	7	Divers	"	1861-64	60	70
Do, do	800,000	2d do. convertible	7	March, Sept.	"	1865	50	55
Cincinnati, Hamilton, and Dayton	500,000	1st mortgage convertible	7	20 Jan. 20 July	"	1867	82	88
Do, do	465,000	2d do. do	7	May, Novemb.	"	1868	72 1/2	75
Cincinnati and Marietta	2,500,000	1st mortgage, conv. till 1862	7	Jan'y, July	"	1862		
Cincinnati, Wilmington, and Zanesville	1,300,000	Do, convertible	7	May, Novemb.	"	1861	94	96
Cleveland, Painesville, and Ashtabula	567,000	Do, convertible	7	Feb'y, August	"	1860	65	75
Cleveland and Pittsburgh	800,000	Do, convertible	7	March, Sept.	"	1873	52	55
Do, do	1,200,000	Do, on Branches	7	Feb'y, August	"	1863	77	82 1/2
Cleveland and Toledo	525,000	Do, convertible	7	April, October	"	1862-72		60
Chicago and Mississippi	800,000	Do, conv. till 1857	7	April, October	"	1862-72		60
Do, do	1,200,000	Do, convertible	7	April, October	"	1862-72		60
Covington and Lexington	400,000	Do, do	6	March, Sept.	"	1863	40	47 1/2
Do, do	1,000,000	2d mortgage, convertible	7	April, October	"	1867	62 1/2	65
Delaware, Lackawanna, and Western	1,500,000	1st mortgage, do	7	March, Sept.	"	1875	86 1/2	87
Florida Free Land	1,500,000	Do, not convertible	7	Jan'y, Sept.	"	1861	77	78
Fort Wayne and Chicago	1,250,000	Do, conv. till 1863	7	Feb'y, July	"	1873		72 1/2
Galena and Chicago	2,000,000	Do, convertible	7	Feb'y, August	"	1863	98 1/2	99
Do, do	2,000,000	2d mortgage, do	7	May, Novemb.	"	1875	90 1/2	90 1/2
Great Western (Illinois)	1,000,000	1st mortgage, do	10	April, October	"	1868		
Green Bay, Milwaukee, and Chicago	400,000	Do, convertible	8	10 April, 10 Oct.	"	1863	87 1/2	93
Jeffersonville	800,000	Do, 2d sec. conv. till 1864	8	April, October	"	1863		
Indiana Central	600,000	Do, convertible	7	May, Novemb.	"	1863		
Indianapolis and Bellefontaine	450,000	Do, do	7	Jan'y, July	"	1860-61	65	82 1/2
Indianapolis & Cin'ti (for Lawb. & U. M.)	500,000	Do, conv. till 1857	7	March, Sept.	"	1866	75	85
La Crosse and Milwaukee	950,000	1st mort. 1st sec. conv. till 1864	8	May, Novemb.	"	1874	73	75
Lake Erie, Wabash, and St. Louis	3,400,000	1st mortgage, conv. till 1859	7	Feb'y, August	"	1865	81 1/2	82 1/2
Little Miami	1,500,000	Do, inconvertible	6	2 May, 2 Nov.	"	1853	96 1/2	91
Michigan Central	1,000,000	No mortgage, convertible	8	April, October	Roat.	1860	92	94
Do, do	600,000	Do, do	8	March, Sept.	"	1869	70	80
Milwaukee and Mississippi	800,000	1st mort. 1st sec. conv. till 1857	8	Jan'y, July	N.Y.	1862	70	77 1/2
Do, do	650,000	Do, 2d do. 1858	8	April, October	"	1863		
Do, do	1,250,000	Do, 3d do. 1860	8	June, Decemb.	"	1877	75	78
New Albany and Salem	500,000	Do, 1st section	10	April, October	"	1868-62		
Do, do	2,325,000	Do, oth. sec. conv. till 1858	8	May, Novemb.	"	1864-75		
Northern Cross	1,200,000	1st mortgage, convertible	8	Jan'y, July	"	1873		
Ohio and Indiana	1,000,000	Do, do	7	Feb'y, August	"	1867		
Ohio and Pennsylvania	1,750,000	Do, do	7	Jan'y, July	"	1865-66		
Do, do	2,000,000	Income, convertible	7	April, October	"	1872		
Pennsylvania (Central)	5,000,000	1st mortgage, conv. till 1860	6	Jan'y, July	Phila.	1860	101 1/2	102
Racine and Mississippi	680,000	Do, conv. sink'g f'd	8	Feb'y, August	N.Y.	1875		
Scioto and Hocking Valley	300,000	Do, 1st sec. conv	7	May, Novemb.	"	1861		
Steubenville and Indiana	1,500,000	Do, convertible	7	Jan'y, July	"	1865		
Terre Haute and Indianapolis	600,000	Do, do	7	March, Sept.	"	1866		
Terre Haute and Alton	1,000,000	Do, do	7	Feb'y, August	"	1862-77	65	70

## Cincinnati Stock Sales.

By KIRK &amp; CHEEVER.

For the week ending December 6, 1868.

BONDS.	Per cent. and Interest
Little Miami, 1st Mort.	68.....81
Covington and Lexington, 1st Mortgage	68.....65
Do, do, 2d do.	78.....45
Do, do, 3d do.	78.....30
Ohio & Miss., E. D., Construction	78.....20
Cinc., Ham. and Dayton, 1st Mortgage	78.....90
Do, do, 2d do.	78.....75
Indianap. & Cincinnati, do. do.	78.....72
STOCKS.	
Cincinnati, Hamilton & Dayton	52
Columbus and Xenia	80
Indianapolis & Cincinnati	46
Little Miami	90
Ohio and Mississippi (E. D.)	3 1/2

Extract from De Coppet & Co.'s Money Circular for the European Steamer of December 8th.

[TRANSLATED.]

NEW YORK, Tuesday, Dec. 7th, 1868.

Our last advices are dated Nov. 23. Since then the leading features of our Stock Market have been a decided rise on Erie Railroad Bonds, based on the daily improving state of the financial position of the Company, and a serious decline on Illinois Central Railroad shares, under the apprehension that the Company will shortly be obliged to call for another instalment on the stock. The market generally has been inactive, and prices, with few exceptions, have not fluctuated materially.—State Stocks—Quotations are generally lower, notwithstanding the near approach of the January interest. Missouri 6s have declined  $1\frac{1}{2}$ ; North Carolina 6s,  $\frac{1}{2}$ ; Tennessee 6s,  $\frac{1}{8}$ , and California 7s,  $1\frac{1}{4}$  per cent. City and County Bonds—There has been a fair demand for these, and prices for favorite descriptions are somewhat higher. We note sales of Brooklyn 6s, Detroit 7s, Cleveland 7s, and Louisville 6s, all issued for water purposes; and of Memphis 6s, indorsed by State of Tennessee; St. Louis City 6s, indorsed by State of Tennessee; St. Louis City 6s, and St. Louis County 6s and 7s have been in good demand; and there have been sales to some extent of Louisville Railroad 6s at an advance. Railroad Bonds have been rather inactive, but prices have been well sustained.—Erie 2d mortgage have risen to 4 per cent.; Erie 3d mortgage,  $\frac{3}{4}$ ; Erie 4th mortgage, 5; Erie Convertibles,  $4\frac{1}{2}$  to 5; Hudson River, 3d mortgage,  $2\frac{1}{2}$ ; Michigan Central 8s,  $\frac{1}{2}$ , and Milwaukee and Mississippi, 2d mortgage, 10s, 2 per cent. Illinois Central Construction 7s have declined 2, and Michigan Southern 2d mortgage 1 per cent. Sales of Galena and Chicago 1st mortgage 7s at  $97\frac{1}{2}$  to  $98\frac{1}{2}$ , Milwaukee and Mississippi 1st mortgage 8s, on 2d section, at 72 and interest, and of Cincinnati, Hamilton and Dayton 1st mortgage 7s at 89 1/2 and interest. Railroad Shares—The market has been rather inactive, and prices, with few exceptions, are lower. Illinois Central have declined  $4\frac{3}{4}$ , Panama  $2\frac{1}{2}$ , Reading  $1\frac{1}{4}$ , Michigan Southern  $\frac{3}{4}$ , Michigan Central  $\frac{1}{2}$ , and New York Central  $\frac{1}{8}$  per cent. Eries have advanced  $\frac{1}{8}$ , and Milwaukee and Mississippi  $\frac{1}{4}$  per cent. Sales of Little Miami shares at 81 to  $81\frac{1}{4}$ , and of Harlem Preferred at  $81\frac{1}{4}$  to 29, Pacific Mail Steamship shares have declined  $5\frac{1}{4}$  per cent. Money continues exceedingly abundant, and we have no change to note in rates. Exchanges on Europe—Rates have advanced materially; the demand has been quite active. The bulk of business on London has been done at  $109\frac{1}{4}$  to  $109\frac{1}{2}$ , and on Paris at  $5.16\frac{1}{4}$  to  $5.15$ .

## Albemarle and Chesapeake Canal.

The meeting held at the office of the Company, in Norfolk, was well attended. The former officers of the company were re-elected, and the list stands, with the directors appointed on the part of the State of North Carolina, as follows:

President—MARSHALL PARKE.

Directors—Benjamin T. Simmons, Thos. V. Webb, J. C. Weston, L. H. Chandler, James Gordon, Addison M. Burt.

North Carolina State Directors—H. M. Shaw, John B. Jones, W. G. Wilson.

NAMES OF COMPANIES. (The following quotations include the accrued interest.)	Amount of Loan.	Description of Bonds.	Rate Int.	Interest pay- able.	Where payable.	Due.	Offered.	Asked.
Baltimore and Ohio	1,128,500	Mortgage	6	Jan'y, July	Balt.	1875	88 1/2	89
Chicago and Rock Island	2,000,000	1st mortgage, conv. till 1868	7	10 Jan. 10 July	N.Y.	1870	96	97 1/2
Erie Railroad	3,000,000	1st mortgage	7	May, Novemb.	"	1867	95	97
Do, do	4,000,000	2d mortgage, convertible	7	March, Sept.	"	1859	88	89
Do, do	6,000,000	3d mortgage	7	March, Sept.	"	1883	76 1/2	78 1/2
Do, do	6,000,000	4th mortgage not convertible	7	April, October	"	1880	62	63
Do, do	4,000,000	Not conv. Sink Fund, \$420,000	7	Feb'y, August	"	1875	41 1/2	42
Do, do	4,351,000	Convertible Inscription	7	Feb'y, August	"	1871	41	41 1/2
Do, do	3,500,000	Convertible	7	Jan'y, July	"	1862	41	41 1/2
Hudson River	4,000,000	1st mortgage, Inscription	7	Feb'y, August	"	1869-70	102 1/2	103
Do, do	2,000,000	2d do. do	7	16 June, 16 Dec.	"	1869	94 1/2	95 1/2
Do, do	3,000,000	3d do. convertible	7	May, Novemb.	"	1870	75	76
Illinois Central	17,000,000	Mortgage, inconvertible	7	April, October	"	1875	93 1/2	93 1/2
Do, (Free Land)	3,000,000	M'ge 345,000 acrs—priv. 7 shares	7	March, Sept.	"	1860	91 1/2	91 1/2
Michigan Southern	1,000,000	1st mortgage, inconvertible	7	May, Novemb.	"	1860	85 1/2	87
New York and Harlem	1,800,000	Do, do	7	May, Novemb.	"	1861-72	88 1/2	89
New York and New Haven	750,000	No mortgage, do	7	June, Decemb.	"	1865-66	93	95
New Haven and Hartford	1,000,000	1st mortgage, do	6	Jan'y, July	"	1873	90	94
Northern Indiana	1,000,000	Do, do	7	Feb'y, August	"	1861	85 1/2	87
Do, Goshen Branch	1,500,000	Do, do	7	Feb'y, August	"	1868	74 1/2	76
New York Central	8,287,000	No mortgage, do	6	May, Novemb.	"	1883	90	90 1/2
Do, do	3,000,000	No m'ge conv. from June 57-59	7	15 June, 15 Dec.	"	1864	101	102
Panama, 1st issue	900,000	Convertible till 1856	7	Jan'y, July	"	1866	175	
Do, 2d do	1,478,000	Do, till 1858	7	Jan'y, July	"	1866	90	91
Reading	1,573,000	Mortgage, inconvertible	6	Jan'y, July	Phila.	1860		
Do, do	1,300,000	Do, convertible	6	Jan'y, July	"	1870	82 1/2	83 1/2
Do, do	3,469,000	Do, inconvertible	6	April, October	"	1866	73 1/2	73 1/2

CITY SECURITIES.	Int't payable.	Off'd.	Ask'd.	CITY SECURITIES.	Int't payable.	Off'd.	Ask'd.
New York, 5 per ct. 1858-60	97	99		Milwaukee, 7 per ct. coup. ....	X	Divers	50
Do, 5 do. 1870-75	93	95		Do, do. ....	X	Do	72
Do, 6 do. 1883	103 1/2	103 1/2		N. Orleans, 6 per ct. cp. R.R. X		Jan'y, July	85
Do, 5 do. 1890-98	90	94		Philadelphia, 6 per ct. 1876-98	X	Jan'y, July	102 1/2
Albany, 6 per ct. coup. 1871-81 X	109	109 1/2		Pittsburgh, 6 per ct. coup. ....	X	Jan'y, July	52
Alleghany, 6 per ct. coup. ....	X	55	70	Quincy, 8 per ct. coup. 1868 X		Jan'y, July	62 1/2
Baltimore, 6 per ct. 1879-90	97	99 1/2		Racine, 7 per ct. coup. 1873 X		10 Feb'y, Aug	80
Boston, 5 per ct. coup. ....	X	99 1/2		Rochester, 6 per cent. coup. ....	X	Divers	90
Brooklyn, 6 per ct. coup. Long X	101 1/2	102		St. Louis, 6 per ct. coup. Long X		Do	87 1/2
Clev'rd, 7 per ct. cp. W.W. 1879 X	100	101		Do, do. Municipal X		Do	37
Cincinnati, 6 per ct. coup. ....	X	80	82 1/2	Sacramento, 10 per ct. cp. 1862-74 X		May, Novemb.	60
Chicago, 6 per ct. coup. 1873-77 X	80 1/2	87 1/2		S. Francisco, 7 p.e. cp. 1865, pay. N.Y. X		Do, do.	87
Do, 7 per ct. coup. 1880 X	98	99 1/2		Do, 10 p. ct. cp. 1871 X		Jan'y, July	50
Detroit, 7 per ct. cp. W.W. 1873-78 X	100	102		Do, 10 do. pay. N.Y. 1875 X		Do, do.	50
Dubuque, 8 per ct. cp. ....	X	100		Do, 6 per ct. pay. N.Y. 1875 X		Divers	50
Jersey City, 6 p.e. cp. W.W. 1877 X	99			Wholesale, 6 per ct. coup. ....	X	March, Sept.	81 1/2
Louisville, 6 per ct. cp. 1880-88 X	70	72 1/2		Do, 6 p.e. cp. Man. 1874 X		April, October	
Memphis, 6 per ct. coup. 1882 X	94	95					

It appears from the annual report that the connection between Albemarle Sound and the Chesapeake will be made by the first of January next, only a small amount of excavation yet remaining to be done for that purpose.—*Norfolk Herald*.

## American Railroad Journal.

Saturday, December 11, 1858.

### How Shall the Railroads of Iowa be Built?

The difficulty of building railroads by borrowing upon their bonds, may lead to an important change in the policy of some of the Western States, which have been very careful to guard, by constitutional prohibitions, against the creation of public debts. The people of Iowa, for instance, had proposed to themselves a magnificent system, composed chiefly of four grand lines across the State from east to west. To each of these, Congress has made valuable donations of land. Two years ago it was supposed that all of them would be readily undertaken as excellent speculations. Three were so undertaken, but the change that has since taken place in public opinion in reference to railroad investments of all kinds, no matter how flattering the picture may be drawn, renders it impossible for the several companies to carry out their schemes in the manner proposed. They are now nearly at a dead stand. Many years must elapse before their roads can be built by private means. The people of the State can ill afford to suffer such a delay, which would leave for years a very large portion of its territory without the means of sending its products to a market. The construction of the four roads across it, from the Mississippi to the Missouri River, would add at least five dollars per acre to the value of its land, or \$150,000,000 in the aggregate. The State can secure such a result by loaning its credit to the companies named to the amount of \$15,000,000. For this sum it can take, as in the case of Tennessee and Missouri, first mortgage on the roads and their lands, and not run the risk of a dollar. But if it should incur any risk, it can better afford to construct the roads, losing every cent of their cost, than to be without them. But if anything is to be lost, we should like to know where the loss can be better placed than upon the very parties who are to reap the benefits of their construction? Heretofore, parties living at a distance have built Western roads, at a fearful cost to themselves. There is an end to all this. If the State of Iowa desires railroads, let it issue its bonds for a reasonable sum upon their cost. Upon the credit of these the public will readily furnish all the money needed.

We can see but one stumbling block in the way, which is the want of moral courage on the part of the leading men of the State. The cry of demagogues will undoubtedly be raised against the measure proposed. To them a State debt will be a dreadful thing to the "poor man," who will probably never contribute a cent to the payment of principal or interest. All that sort of appeals will be resorted to to inflame the prejudices of this class, and affix a stigma upon the advocates of the creation of a State debt. There are probably several hundred politicians in the State who expect to be President of the United States, and some thousands Governor of the State, with expectants for less exalted positions, increasing in

ratio as we descend in the scale, each of whom is constantly studying how to leave a "clean record." The greater part of these will probably incline against the measure proposed or will maintain a studied neutrality. A little moral courage in such a contest as this would be worth everything. We hope, but we do not much expect to see enough of the right sort. It is needless for us to tell the people of the State, that if they would have railroads they must furnish the means for their construction upon the credit of its bonds.

### Wisconsin.

The people of Wisconsin seem to be moving in the matter of the assumption by the State of the Bonds of municipal bodies, and of what are termed *farm mortgage* bonds, issued to railroads. These bonds were subscribed and issued in exchange for stock in various roads. This stock, in some cases at least, has by the frauds of boards of railroad managers, become worthless. If the payment of the bonds issued for it be enforced, the people of the State will have to make good, in part, the frauds that have been committed, and the losses that have been suffered. This fact touches them to the quick. The municipal bodies, if they have not actually repudiated, are in default. The makers of the farm mortgage bonds have openly repudiated, even where the roads have been built to which they have subscribed. The Legislature of the State has aided and encouraged repudiation by its legislation in reference to the farm mortgages, and also in reference to the city of Milwaukee, which we conceive has actually repudiated. If the commercial capital of the State, whose community is made up of men who are supposed to be the most sensible of the importance of maintaining inviolate solemn obligations, repudiating similar acts on the part of smaller towns, and of farming communities, will create no surprise. Three years ago the credit of no State stood fairer than that of Wisconsin. There was no one which seemed to offer safer investment for capital. All this fair picture is changed. Within it has been enacted the most stupendous railroad fraud ever perpetrated. A whole Legislature, governor and all, was bribed by a railroad company. Plunder seems to have been the order of the day. The credit of every railroad in the State, and nearly every municipal body, is destroyed. This is a sorrowful contrast to draw. We hope the people of the State are not too far demoralized to not feel its degradation. We watch with great interest the result of the present movement. It will show the stuff of which the people are made.

### East Pennsylvania Railroad.

We learn from the Allentown *Democrat* that contracts have been entered into for laying the track along the whole line of this road, from its junction with the Lehigh Valley at that place and Reading, and that the bed of the road is ready for the rails nearly the whole distance. It is also said that the cars will be running in January. When that is accomplished, a new and direct route will be opened between New York and the West, via Easton, Allentown, Reading, Harrisburg, Pittsburgh, etc. The connecting links composing this chain are the New Jersey Central, Lehigh Valley, East Pennsylvania, and Lebanon Valley roads—the latter connecting the Reading road, at Reading, with the Pennsylvania Central, at Harrisburg, and through that road with the Pittsburgh, Fort

Wayne and Chicago road, for Chicago and the West.

### Richmond and York River Railroad.

At the fourth annual meeting of this Company, after the reading of the report of the President and Directors, and re-election of Alexander Dudley, Esq., as President, the question of appointing Directors by the stockholders came up, when it was announced that the Board of Public Works had appointed four on the part of the State, viz: Gen. Wm. B. Taliaferro, Wm. G. Paine, C. W. Purcell and W. R. C. Douglas, leaving but one for the stockholders to appoint. The Board of Public Works is required by law to appoint such proportion of the directors as the stock held in behalf of the State in such company bears to the whole of the capital stock thereof; and as the capital stock of this company is \$700,000—\$500,000 of which is owned by the Commonwealth, and \$200,000 by private stockholders—the Board of Public Works have the right to appoint four out of the five Directors.

At an adjourned meeting of the Company the private stockholders elected Mr. John Prosser Tabb as their Director.

A resolution was passed authorizing the directors to proceed to let the Pamunkey River Bridge, to contract as early as possible, and have the same ready for the passage of the trains as soon as the road shall be completed to the White House, if they have the means or can obtain the necessary amount.

### Atlantic and Great Western Railroad.

We learn that a delegation, on behalf of English capitalists who propose to construct this road, have recently made a careful examination of its route, and will report favorably to their principals.

### Long Island Railroad.

A meeting of the stockholders of this Company was held in Philadelphia on the 29th ult., at which more than one-half the entire stock was represented. The question of a change of terminus from South Brooklyn to Hunter's Point was considered; and the result was a unanimous vote in favor of the change, provided it could be effected on the terms named by the board of directors. By this arrangement, the Long Island Company will become the owners of the Flushing Road, and of a new road, yet to be built, some three miles in length, which will connect their present road at Jamaica with the Flushing road, at or near Hunter's Point, on the East River, above the City of Brooklyn. The Long Island Railroad Company are also to be relieved of their present lease of the Jamaica Railroad, which has been to them the source of so much litigation and expense. It is understood by the stockholders of the Long Island Railroad Company that the parties who take the Jamaica Road off their hands will convert it into a horse road, and will therefore still contribute in passenger traffic to the Long Island Road. The Long Island Railroad Company are to pay \$275,000 in 7 per cent. bonds, having thirty years to run, secured by mortgage on the Flushing Road, and \$62,000 in cash. The Long Island Company at present pay the Jamaica Company \$33,000 per annum for the use of their road, together with all the taxes and expenses of repairs, while the interest on this new bonded debt will be but \$19,250. The Flushing Road and the new road to connect,



we believe, make together about fourteen miles of additional road which the Long Island Company require.

#### New York Central Railroad.

At the annual meeting of the stockholders of the New York Central Railroad Company, held at Albany, on the 8th inst., the following gentlemen were elected directors for the ensuing year:

Erastus Corning, Albany; Dean Richmond, Buffalo; John H. Chedell, Aulurn; Horace White, Syracuse; Alonzo C. Paige, Schenectady; Nathaniel Thayer, Boston; John V. L. Pruyn, John L. Schoolcraft, Albany; Isaac Townsend, New York; Livingston Spraker, Palatine Bridge; Jacob Gould Rochester; Cornelius S. Tracy, Troy; Charles H. Russell, New York.

This is the same with the old Board, except Charles H. Russell, in place of John D. Wolfe.

#### London Correspondence.

26, THROGMORTON STREET,  
LONDON, November 19th, 1858.

To the Editor of the AM. RAILROAD JOURNAL.

By the arrivals from your side we note a decline in your Stock Market, but it has not, however, had any great effect here. State Bonds have been in request, and at improved prices. United States 1868 bonds have sold at 105½, but are this day quoted 104½a105; 5 per cent. bonds at 94½a 95½; Maryland 5 per cents (sterling) have sold at 96½, and are quoted 96a97; Massachusetts sterling bonds are 102a104; Ohio 6 per cent stock, 95a97; Pennsylvania 5 per cent. stock, 81a83; and bonds, 85a87.

In Railway Bonds, considerable enquiry is noted for Panama 1st Mortgage Bonds of 1859 at par, and of 1865, at 95—both in sterling; 2d Mortgage sterling have commanded 90 per cent. In other Railway Bonds there has not been much animation during the week. New York Central 6 per cent. bonds have receded from 82a85 to 81a83, and the 7 per cents from 94a98 to 94a96; Third Mortgage Erie Bonds from 70a72 to 69a71. Other quotations for bonds remain as before, and the only variation in the price of shares is in the Erie, which from 14a15, have gone to 15a17. The official markings during the week have been, Illinois Construction 7 per cent., 82a81½; six per cents, 81½, (ex. 4s. 2d. to the dollar); Freeland's, 82; shares have not marked; Michigan Central Sinking Fund Bonds have marked 87½; New York and Erie 3d Mortgage, 71 and 70; shares, 16; New York Central 6 per cent., 82; shares, 77a77½.

The Committee of the Illinois Railway shareholders met on Tuesday last to agree upon a report which is expected to be published in a few days. When it is out I will furnish you with a few remarks upon it. On this side we are looking for a report of the Erie directors. I know a detailed report is only published every other year, (why, it is strange to say,) but surely we are to be favored with some better statement than that last published. It is better to state everything clearly and distinctly, than not to make a report at all. We know there must be a falling off in receipts, and possibly (I think probably,) an increase in expenditure for maintenance of way and other charges. It is better to make them known, and to state the revenue from local and through traffic, and the cost of obtaining each.

Numerous enquiries are being made relative to

defaulting lines. You would do a vast amount of good to American railroad interests if you would make known in your widely circulated JOURNAL the names of all railway companies having failed to keep their engagements; together with the prospect there is of any improved condition.

I am yours, &c.,

WILLIAM LANCE.

#### Machine Made Horse Shoes.

Our readers may have noticed an advertisement in the Journal, for the past few years, of Mr. BURDEN's machine made shoes for horses and mules. This machine, by an ingenious process, takes a bar of iron and forms it into a perfect shoe, at the rate of one per minute. The shoes are of any desired shape, and are being exclusively used by the cavalry and artillery of the army and the overland transportation trains. For the information of horse shoers, we will state that they can be purchased for six dollars per hundred pounds. Further information can be obtained from the advertisement, or by addressing WM. F. BURDEN, Esq., Agent Troy Iron and Nail Factory, Troy, N. Y.

#### Railroad Earnings.

The earnings of the Sandusky, Mansfield and Newark Railroad for October were... \$20,533 23  
Expenses ..... 16,329 00

..... \$4,204 23

The earnings of the Great Western (Ill.) Railroad for October were. .... \$47,808 33  
Expenses, about ..... 28,000 00

..... \$19,808 33

The following is a statement of the earnings of the Galena and Chicago Railroad for November:

	1857.	1858.	Decrease.
Freight ....	\$116,039 13	\$67,999 28	\$48,039 85
Passengers .	48,396 60	36,758 82	11,637 78
Mails, etc...	10,731 80	3,000 00	7,731 80

\$175,167 53 \$107,758 10 \$67,409 43  
Corrected earnings for the previous month, \$141,652 88.

The earnings of the Hudson River Railroad in November were as follows:

1858 .....	\$137,094 50
1857 .....	121,282 84

Increase ..... \$15,812 06  
Decrease in expenses compared with

1857 .....	14,443 35
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Increased net profits ..... \$30,255 41

The following is the business of the Michigan Southern Railroad for November, 1857 and 1858:

	1858.	1857.
Passengers .....	\$77,894 37	\$101,669 56
Freight .....	73,201 98	71,765 49
Mails .....	4,485 62	3,985 23
Express and miscellan's	18,141 42	5,425 47

Total .....	\$174,023 39	\$182,745 47
Expenses .....	99,087 73	137,401 54

Net profits. .... \$74,935 66 \$45,343 93

The receipts of the Grand Trunk Railway of Canada for the week ending November

27th, were .....	\$47,141 43
Week ending November 28, 1857 ....	51,591 95

Decrease ..... \$4,450 52

Total traffic from July 1st .....	\$969,491 46
Same period last year .....	1,030,778 59

Decrease ..... \$61,287 13

The traffic receipts on the Great Western Railway of Canada for the week ending Nov. 26th, was \$37,397 62; corresponding week of last year, \$45,788 21—decrease, \$7,391 09.

The business of the Illinois Central Railroad for November, 1858, was:

#### Land Department.

Acres Construction Lands	
sold .....	2,167.11 for \$24,865 43
Acres Interest Fund Lands	
sold .....	for .....
Acres Free Lands sold ...	435.97 for 5,501 04

Total sales during the	
month .....	2,603.06 for \$30,366 47
To which add Town Lot sales .....	852 45

Total of all .....	\$31,218 92
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Acres sold since 1st	
Jan'y, 1858. ....	49,927.36 for \$669,827 69
Acres sold prev'ly, 1,200,933.78 for	15,311,440 40

Total .....	1,250,861.14 for \$15,981,268 09
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Construction Bonds canceled in November,	
1858 .....	\$47,000
Do. canceled previously .....	865,500

.....	\$912,000
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Free Land Bonds canceled in	
November, 1858 .....	\$6,000
Do. canceled previously .....	116,000

.....	122,000
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Total Bonds canceled up to November 30,	
1858 .....	\$1,034,000

#### Traffic Department.

Receipts from passengers .....	\$62,165 33
Do. freight .....	77,278 36
Do. mails .....	6,358 33
Do. rent of road .....	2,194 98
Do. other sources .....	3,202 48

Total receipts in November, 1858 ...	\$151,199 48
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Do. do. 1857 ...	187,058 19
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Total receipts since 1st Jan'y, 1858.	\$1,773,112 21
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Total receipts in correspond'g period,	
of 1857 .....	2,148,909 32

The receipts of the New York and New Haven Railroad for November were as follows:

Passengers .....	\$80,067 11
Freight .....	13,000 00

Total .....	\$93,067 11
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Due other roads .....	22,889 17
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.....	\$70,197 94
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For November, 1857 .....	58,401 12
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Increase .....	\$11,796 82
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The earnings of the Cincinnati, Hamilton and Dayton railroad, for November, were:—

1858 .....	\$45,677 39
1857 .....	36,791 59

Increase .....	\$8,885 80
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The earnings of the Little Miami and Columbus and Xenia Railroad for November were:

1858 .....	\$101,303 97
1857 .....	71,782 14

Increase .....	\$29,521 83
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The following is a statement of the earnings and expenses of the Sacramento Valley (Cal.) Railroad for September and October, 1858—22½ miles:

	Sept.	Oct.
Earnings .....	\$16,715 74	\$17,026 00
Expenses .....	6,240 81	7,000 00

Net earnings .....	\$10,474 93	\$10,026 00
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The earnings of the Chicago, Burlington and Quincy Railroad Company, between Chicago and Burlington, in November, 1858, were for

Freight .....	\$75,181 88
Passengers .....	81,369 61
Mails and miscellaneous .....	1,799 83

Total earnings.....\$108,351 32

Of the Quincy and Chicago Railroad Company, between Galesburg and Quincy, in November, 1858, were for

Freight .....	\$15,371 22
Passenger .....	8,817 22
Mail and miscellaneous .....	1,178 83

Total.....\$25,366 77

#### New York City Railroads.

The success of our city horse railroads is evinced by the following quotations of the stocks at the Broker's Board—the Second Avenue being the only one not selling above par. Eighth Avenue is held at 160, and would probably sell at 150; Sixth Avenue is quoted at 118a120; Third Avenue, 120; Second Avenue, 100, and Brooklyn City Road, 111a112. The Eighth Avenue is a close corporation, but the stocks of the other roads are widely distributed. They all pay 8 to 10 per cent. dividend, with a considerable increase in earnings and continually increasing traffic. The Sixth, Third, and Second Avenues have in former years been much depressed, but have now, by being operated with the greatest economy, been brought to a dividend-paying point, and promise to be among the most profitable railroad stocks in the country. The Second Avenue road has paid two quarterly dividends of 2 per cent. each, with a reserve of nearly as much more. It has also cleared off its entire floating debt, and has real estate unincumbered to the value of \$40,000, which is not needed for the purposes of the road. The capital stock is \$800,000, and the funded debt \$350,000. Of the capital stock, \$250,000 is unissued.

#### Cumberland Valley Railroad.

The following is a statement of the receipts and expenses of this Company for the year ending 30th of September, 1858:

RECEIPTS.	
Cash and cash items, October 1, 1857..	\$45,701 58
Revenue tolls .....	155,624 50
Revenue rents .....	664 83
Revenue interest .....	173 34
Assets of material sold .....	1,453 07

Total.....\$203,617 32

EXPENDITURES.	
Expenses and for debts due October 1, 1857 .....	\$79,271 14
Dividends on stocks and interests on bonds .....	68,161 50
State tax on stocks and dividends ....	4,301 25
Tolls, etc., due .....	48,170 26

Total.....\$203,617 32

Owing to dull business and the comparative failure of the wheat crop in Cumberland Valley, the receipts of 1858 were \$32,500 less than those of 1857. But the expenses were \$57,000 less, so that the cash balance on hand is larger.

#### Louisville and Nashville Railroad.

The Louisville Journal announces that the Louisville and Nashville Railroad has been completed to Munfordsville, on Green river, and that the time of travel between Louisville and Nashville is now reduced from 40 hours to 25 hours.

#### Dauphin and Susquehanna Coal Company.

The bondholders of this Company have brought the property and franchises of that Corporation to the hammer, and they will be sold in March next, at the Exchange, in Philadelphia. The mortgage debt under which this proceeding is had, amounts to \$97,000, with interest from April, 1851. The property to be sold consists of 41,766 acres of land in Dauphin and Lebanon Counties—coal-mines, steam-engines, dwelling-houses, machine and work shops, farms, saw-mills, and a vast collection of extremely valuable property on which large sums of money have been expended.

#### Chester Valley Railroad.

The Reading Railroad Company leased the Chester Valley Railroad, running from Morristown to Downingtown, and this will prove a lucrative feeder to the former, as it traverses the garden-spot of Pennsylvania, and will send over the Reading Railroad to Philadelphia immense amounts of live stock, farm products, milk, &c., which never came to market over that route.

#### Journal of Railroad Law.

##### THE ROCK ISLAND BRIDGE CASE.

The history of this interesting case was fully presented in our last number. On the 19th of October, the following opinion was delivered by Judge Love against the application for an injunction.

James Ward vs. the Mississippi and Missouri River Railroad Company.

Bill in chancery before the District Court of the United States for the District of Iowa.

##### Opinion of the Court.

The object of this bill is to abate the Rock Island Bridge as an obstruction to the navigation of the Mississippi River, and a public nuisance. The motion now before the Court, however, does not aim at that object. The question whether the bridge is a public nuisance, could not be determined upon this preliminary motion, supported by the *ex parte* testimony which has been read. That question can only be decided at the final hearing of the merits and upon depositions regularly taken.

The defendants have answered within the rules denying the material allegations of the bill. The plaintiff moves the Court for a special injunction to restrain the defendants from making certain further erections intended to repair and strengthen one of the piers of the bridge. This motion is supported by affidavits taken without notice or cross-examination, all tending to show that the bridge is a material obstruction to the navigation of the river.

The rule is well settled, that when an answer has been filed denying the material allegations of the bill, an injunction cannot be granted upon affidavits except to prevent some impending and irreparable injury. This rule is founded in the reason of the law. A sworn answer in chancery when responsive to the bill, is itself evidence so strong that it must be overcome by the testimony of two witnesses, or by that of one witness fortified by circumstances. Affidavits can never be used at all as evidence except to meet certain pressing exigencies which cannot be provided for by testimony regularly taken. Affidavits are used *ex necessitate*, and where no necessity exists they cannot be relied on. Unless the party moving for the injunction is threatened with some impending and irreparable injury, there is no necessity for resorting to testimony taken without notice and without the test of cross-examination. Hence the rule stated above.

Now, it is admitted that the Court can make no order for the removal of the bridge, until the final hearing. Indeed, the bridge, even in the event of a decree against it, will probably stand untouched until the final determination of this cause in the Supreme Court. The affidavits read by the complainant abundantly show that the bridge is a material obstruction to navigation, but none of them

afford the slightest evidence that the danger of the navigator in passing the draw will be in the least degree increased by the repairing and strengthening of the pier, as proposed by the defendants. On the contrary, counter affidavits, read by the defendants, establish the fact that the additional masonry will in no wise add to the difficulty of passing the draw. This fact seems, indeed, to have been conceded in the argument. The counter affidavits further show that the pier in question will probably, if not fortified as proposed by the defendants, yield to the pressure of the ice at the breaking up of the river in the spring. From all this, it is apparent that the plaintiff, as a navigator of the river, is threatened with no immediate and irreparable injury in consequence of the proposed repairs.

If it were admissible by the rules of law to consider the affidavits read by the plaintiff touching the great question involved in this case, the Court would without hesitation decide that the bridge is a most material obstruction to navigation. But upon the final hearing the case made by these affidavits may be overruled, and the Court may be forced by legal testimony to the conclusion that the bridge is not a public nuisance, but a lawful structure. Suppose in the meantime, the pier in question should yield to the pressure of the ice, how could the injury to the defendants be repaired? The remedy by suit upon the injunction bond for the constantly recurring loss resulting from the delay of trains of cars in crossing the river, would manifestly prove inadequate.

One other consideration has much influence with the Court in deciding this motion. It is admitted that the bridge itself must stand until the final determination of the cause. In the meantime it will be in use, and trains containing persons and property will pass over it daily. The interest and safety of the public therefore require that a pier which is proved to be insufficient should be strengthened, and the bridge thus made as secure as possible.

The motion is therefore overruled.

Immediately after the above decision of Judge Love, refusing the injunction, a supplemental bill was filed, of which the following is a copy:

James Ward vs. the Mississippi and Missouri Railroad Company.

Your petitioner states that since the filing of the original bill and issue joined, your petitioner is informed, and verily believes that the said defendants contemplate placing in the Mississippi River, near the Railroad Bridge, between Davenport and Rock Island, other and different obstructions than those set forth in the answer of the said defendants, and that they have prepared and have now in readiness, near the said bridge, several large cribs of hewn timber, part with triangular starlings, securely bolted together; not at all suitable, nor could they be used in their present shape, for making coffer dams, nor to make the additions described in their answer.

And your petitioner is informed and verily believes, that the said defendants contemplate soon sinking the said cribs in the bed of said river, somewhat as is shown in diagram hereto attached, and filling the same with stone, thereby adding in a great degree to the obstruction of the water caused by said piers and the passages of boats and rafts.

Your petitioner further states that the said cribs would, from two other long piers, be very much alike, but not as wide as the present long pier which so obstructs the passage of boats. He has been informed that the said defendants are about to put part of the said cribs in front of the stone pier first east of, and on the Illinois side of the long pier, in which case your petitioner verily believes that no steamboat could possibly pass said bridge. And in case the said cribs, or part of them, are placed above or in front of any other of the stone piers, it will cause a very great deflection of the water, and increase materially the present obstruction to the passage of boats and destroy the passage of rafts. Your petitioner, therefore, prays that the said defendants may be enjoined



from altering or enlarging, or improving the piers of said bridge, except as is set forth in their answer, viz.: by adding four feet to one side and five feet to the other side of the stone pier, next towards the Ohio shore from the long pier, as claimed by said defendants in their answer, with a coffer dam three feet in width on each side thereof, or to make it more explicit, that nothing shall be put into the said river, temporary or otherwise, which shall extend more than eight feet from the present cut stone mason work of the one pier, which will allow said defendants all that is claimed in their answer, and that the defendants may be enjoined from sinking any crib whatever in said river.

The hearing upon this supplemental bill was first set down for Oct. 25th. Afterwards, at the request of defendants, it was adjourned to Nov. 16, they stipulating that no cribs or other structure should be placed in the river before the argument. This stipulation on the part of the defendants brings the matter so late into the season, that it is hardly probable that any repairs will be attempted before spring, even if the obstacles sought to be raised by this litigation should be removed. If such should be the case, it seems not unlikely that the freshets and breaking up the ice may put an end to the suit by sweeping away its cause.

It should be borne in mind, however, that whether the bridge be a serious obstacle to navigation, as it must be admitted the evidence seems to show, or not, that the removal of the structure would be scarcely less an inconvenience to another class of the traveling public. A railroad bridge across the Mississippi seems imperatively demanded by the progress of civilization; and there can scarcely be a question but that sufficient advances have been made in architectural art to permit the erection of a bridge which shall subserve its highly useful purpose of spanning the river for the convenience of public travel, and yet afford safe and free passage for sailing craft.

#### Navigation of Canals by Screw Steamers.

By NEIL ROBSON, C. E. Paper read at the Institution of Engineers in Scotland. From the *London Civ. Eng. and Arch Jour.*, September, 1858.

It is not the object of this paper to go into any lengthened history of the various modes of haulage that have been tried on canals in general, but rather to collect and make known to the members of the Institution some facts connected with recent successful attempts to introduce screw propulsion on the Forth and Clyde Canal, with which the author is best acquainted, and which, as is well-known, is one of the principal arteries of inland navigation in Scotland. And by so doing, to direct the minds of the ingenious mechanical engineers of which the society is composed to the great importance of the subject, and to elicit opinions as to its farther development, with a view to improve the mechanical details and arrangements of the power employed.

But whilst this is the chief object of the author in bringing the subject before the Institution, he will venture to digress so far as to introduce a few preliminary observations on inland navigation in general, and will briefly notice a few of the English canals on which this new mode of haulage has been tried and is now in use. The several experimental attempts which have been made to introduce other modes of haulage on the Forth and Clyde Canal will then be given somewhat in detail, and the paper will be brought to a close by a description of the system now being introduced on that canal; reference being made to drawings illustrative of the boat *Thomas* and her engine, with which the first really successful experiment was made, under the canal company's more immediate control, with the advice and under the superintendence of their officers. In the concluding re-

marks the author will contrast the expense of horse and steam haulage, as brought out by the results so far as they have gone.

It cannot be denied that since the introduction of railways, canals, which prior to that event formed the principal mode of conveyance for a very large proportion of the goods and mineral traffic of the country, have been thrown into the shade; and that the attention of practical men has been more devoted to the development of railway traffic, not only as regards the mechanical appliances for its transit, but also as regards the acquisition and carrying of large quantities of merchandise and minerals, than to the improvement of the more ancient mode of conveyance.

There is no good reason, however, why this should be so; for although in some cases canals may be the avowed rivals of railways, in others, they are or might be made the means of feeding their traffic, or of relieving them of a portion of the heavy merchandise and mineral traffic which railways cannot always carry with advantage to themselves. It does not follow that because a railway may be carrying a large amount of tonnage it is doing so profitably; on the contrary, it is to be feared that in many cases, if the cost were fairly set against revenue, the result would be found quite the reverse; the rates obtained being inadequate to meet the greater wear and tear of the iron road, as compared with the water-way, and the many sources of expense to which railway plant is subjected. For passengers and for light and perishable goods, requiring quick despatch, canals never can or ought to compete with railways; but for bulky and heavy goods and minerals, the author is convinced that they can and will maintain their ground, provided their managers keep pace with the improvements and requirements of the day.

In Great Britain and Ireland, the total length of canal and inland navigation is about 4,000 miles; and it is estimated there has been expended in the construction and improvement thereof at least £50,000 sterling. These figures of themselves sufficiently demonstrate the importance, in a national point of view, of this great interest.

For the most part, canals carry on toll; that is to say, they are open to any trader, however small, who chooses to send his own boat with horses to tow it, on payment of the fixed rate of toll; and in this respect they are similar to turnpike roads. In a few instances canal companies act as carriers on their own account, but it is questionable how far they do wisely in this. It consists with the author's knowledge that the Forth and Clyde Company, who ceased altogether to be carriers about five years ago, except to a very small extent, have made more money by falling back on their simple province of keeping the canal in repair, and acting as recipients of toll.

It appears that the first attempt to propel boats by the screw on the English canals was made about twenty years ago between London and Manchester; but from the number of locks, there being about one in every mile, and from the narrowness and want of depth of the canals which compose that route, it was not so successful as to lead to any practical result at the time. Within the last three or four years, navigation by screw boats has been introduced on the Aire and Calder navigation, on the Leeds and Liverpool Canal, and on several others in that country; and so far with success. The best practical results as regards speed and economy of working is obtained on those canals of which the depth is not less than 6 feet; breadth at water level 50 feet, and at bottom about 35 feet; but as the majority are of less size, it is to be hoped that the time will come when screw propulsion may be applied with advantage on our shallowest and narrowest canals; and to that end, the bringing of the subject to the notice of such meetings as this will no doubt tend.

The first attempt to move a vessel by steam on the Forth and Clyde Canal was made about the beginning of the present century, and it appears that Mr. Smyington was connected with the fitting up of the boat. This boat was propelled by two paddle wheels close together at the stern, with

the driving cranks between them. It ran for some little time; but its chief merit was considered to lie in its being an ice breaker, for which it answered admirably. Although the records of the canal do not mention the fact, there can be little doubt that this was the *Charlotte Dundas*, constructed by Smyington in 1802, and with which he made one of his first essays in steam navigation.

In 1828, the *Cyclops*, a boat for carrying passengers, was fitted up as a steamer with paddle-wheels at the stern. She was 64 feet long, 16 feet broad, and 6 feet deep; carried about 40 tons of goods, and went about  $3\frac{1}{2}$  miles per hour on the canal, and about 6 miles on the Firth of Forth.

In 1831, the *Manchester* steamer was built, propelled likewise by one wheel at the stern. She carried from 50 to 60 tons of goods, and steamed about  $4\frac{1}{2}$  miles on the canal, and 7 miles on the Firth.

The *Lord Dundas* was also built in 1831 as a passenger boat. She had two paddle-wheels, one on each side of the stern, and steamed about  $7\frac{1}{2}$  miles an hour on the canal.

All these boats ceased to be used on account of the cost of working being greater than horse haulage, and from constant failures in the machinery.

It was proposed at one time, and actually tried, to haul vessels on the canal by laying a chain along the bottom, to be acted upon by a pulley in the boat; the pulley being worked either by hand or steam power.

Another experiment was the laying down a line of railway on the towing path, on which a locomotive engine ran and hauled boats behind her; a previous trial for hauling them by a locomotive for common road running on the towing path having signally failed, as might reasonably have been expected.

In 1844, a Mr. Kibble patented a paddle-wheel composed of a number of float-boards fastened on an endless chain working round two drums. It was thought that this mode of propulsion was well adapted for canals, and a boat fitted with a paddle of this description on each side was tried, but given up on account of the expense.

The late Mr. Smith, of Deanston, had a plan which he intended for the small canals in the West Indian Islands, of having a wheel passing through and projecting below the bottom of the canal and thus haul the boat. This plan was tried on a reach of this canal about ten years ago, but did not answer.

In addition to these, the author understands that several attempts were made to introduce steam on the Union and Monkland Canals, which communicate with the Forth and Clyde Canal, but are of less depth and width. In 1846, a steamer with double screws was tried on the Union. In 1845, a steam-tug built by Mr. Wm. Napier, Jr., was tried on the Monkland Canal.

From some cause or other it appears that all these attempts, not only on the Forth and Clyde, but on other canals running into it, were more or less failures; and that it is only within the last two years that anything like a systematic carrying out of steam propulsion has been accomplished. The available depth of water on this canal is about 8 ft. 6 ins.; average width at water surface, 60 feet; and at bottom from 30 to 40 feet. Its length is 29 miles, and there are 40 locks, the dimensions of which are—length, 70 feet; width, 20 feet; and least depth on sill, 9 feet 4 ins. The Monkland Canal, now amalgamated with it, is 12 miles long, but its available depth is only about half that of the Forth and Clyde; width at water surface, 40 to 50 feet; and at bottom, 25 to 30 feet; length of lock, 70 feet; width, 13 ft. 6 ins. The total merchandise and minerals conveyed on the main canal and its Monkland branch, is upwards of two millions of tons per annum.

At present there are five screw steamers, belonging to different traders, daily at work on the main line, and one belonging to the canal company, who are also fitting up another with screw machinery to serve as an ice-breaker, and have drawings in progress for engines to be fitted to a canal and sea-going steamer.

The lighter *Thomas*, to which this paper more particularly refers, was not originally built for being fitted with the screw, nor is she of a class adapted for going out into the Firth, but nevertheless she may be taken as a fair sample of a large class of lighters in use on the canal. She is 66 feet long; 16½ feet broad; draws about 6½ feet of water; and carries from 70 to 80 tons of cargo. The screw lighters belonging to the traders are larger, and are fitted to navigate the Firths of Clyde and Forth as well as the canal, and to carry from 100 to 120 tons of cargo.

The engine and boiler of the *Thomas* are placed in the stern, behind the bulkhead, which partitions off the stern portion to the same extent as the stern portion of the other lighters of the class which is used for horse haulage; and this space, small though it is, is found amply sufficient for the boiler, engine, and coal bunker, with room for attending the engine and stoking the boiler. The weight of the engine, boiler, and propeller, including 13 cwt. of water, does not exceed 3 tons. The dimensions of the boiler and engine are as follows, viz.:

Inside diameter of body of boiler, 3 feet; and swelled to 3 feet 5 inches at surface water line. Height of boiler from fire-bars to crown, 7 feet 3 inches. The boiler is furnished with 54 brass tubes of the average length of 3 feet 5 inches; and tapered from 2¼ inches diameter inside at the fire-box tube plate, to 1¾ inches inside diameter at the up-take tube plate; which give the heating surface in fire-box and tubes as follows, viz.:

	Square feet.
Fire-box, 2 feet 6 inches by 1 foot 6 inches.	11.78
" tube plate	2.54
Total fire-box surface	14.32
54 tubes, 3 feet 5 inches long and 2 inches average diameter	96.60
Total heating surface	110.92
	Ft. Ins.
Diameter of cylinders	0 6½
Stroke of piston	0 10
Valves worked by link motion, extreme throw	0 3
Diameter of screw propeller	3 6
Pitch of screw	4 0

The engine cylinders are bolted together, forming the steam chest between them, in the usual way. The cylinders lie on the bilge of the lighter, and their connecting rods are attached directly to cranks at right angles to each other on the engine shaft, which is coupled to the propeller shaft. The screw of 4 feet pitch at 130 revolutions per minute gives a speed of five miles an hour, while the advance of the screw due to the speed is 5.909 miles per hour, showing a slip of the screw of 2.13ths.

It is found that 35 lbs. per square inch of pressure in the cylinders is sufficient for propelling the lighter with a full cargo of from 70 to 80 tons. In breaking through the ice on the canal in December, 1856, the boiler was worked up to 85 lbs. pressure, and at that pressure the boiler was more than capable of supplying the cylinders with steam. The contracted area of the water surface gave rise to a suspicion that the boiler might be liable to prime, and after some experiments with a glass model boiler, it was resolved to fit in a current plate round the inside of the boiler shell. Without estimating the merits of the current plate, it may be stated that the boiler is quite free from priming with the steam taken from the crown with a 1½ inch pipe. The taper tubes were deemed a desideratum, with the view of obtaining an increased influence from the fire throughout the short distance it has to pass from the furnace to the uptake, and also to allow the upper tube plate to be reduced in diameter, thereby increasing the surface of the water in the boiler.

On a late trial of four trips from Port Dundas to Bowling (a distance of 12 miles) and back, making a distance of 96 miles run, passing through 144 canal locks, and getting up steam 8 times, the

consumption of coal (good Monkland soft coal) was 1 ton 3 cwt.; which at average length of runs on the Forth and Clyde Canal might be stated to be equal to 100 miles steaming by one ton of coals.

As the engines were fitted to the lighter as an experiment, it was deemed desirable to make them of sufficient power to tow another lighter of similar size, which they were quite able to do: but the traffic the lighter is at present employed in does not afford opportunities for using the surplus power in towing an additional boat.

The boiler has been proved to be so capable of raising steam, that the canal company have contracted for two similar boilers with iron tubes, to supply steam to two 9½ inch cylinders with 15 inch stroke of piston. These are to be fitted to an ice-breaker, which is also used for the surface of the canal works.

The lighter has been constantly at work for the last fifteen months between Port Dundas and Bowling, a distance of 12 miles, carrying general merchandise in connection with the Dumbartonshire Railway, and without losing a single trip through any accident, injury, or repair of the machinery. The only alteration made in the machinery was the substitution of cast iron valves for brass valves, and the only mishap which has befallen any part of the working gear was the breaking of one of the arms of the screw propeller. She can easily make three trips a week, and usually performs the voyage each way in four hours, when not detained at the locks by the passing trade; which, including the detention in passing through the eighteen locks, is at the rate of 3 miles an hour, but when fairly clear of the locks her average speed is 5 miles per hour.

There is very little additional swell or washing of the banks at this speed, and on the whole there does not appear to be any appreciably greater wear and tear of the canal than that arising from the passage of boats drawn by horses,—at all events, no more than would be compensated for by the saving in upkeep of the banks, in having no towing path to uphold were horse haulage done away with.

Altogether the result proves that by means of the screw the navigation of canals by steam is perfectly practicable. But it is still doubtful how far this power can be applied to propel, with advantage, more than the boat in which the engine is placed, owing to the difficulty of steering boats towed behind, especially in narrow canals; and to the circumstance that when the tug with its train of boats approached a lock, each would have to be disconnected and taken through singly. The author inclines to the belief that, as a general rule, an engine must be put in each boat. That this can be done with advantage with boats for goods, he thinks he has proved; but the problem has still to be solved, whether the system can be profitably applied to boats carrying minerals alone on such canals as the Monkland, of which the available depth is only 4½ feet, and the width proportionably small. These boats, or "scows" as they are termed, carry on an average 55 tons; are in length 66 feet, width 13 feet 4 inches; cost, built of iron, about £250; and are usually hauled by one horse. The speed when loaded is about 2 miles an hour clear of the locks, and going back empty it is a little more.

It is obvious that if every such coal boat must have an engine for itself, three things will be required. 1. The machinery must occupy little room, in order to leave space for the cargo. 2. The first cost must be small. 3. Its working must be economical, both as regards repairs and consumption of fuel. The author does not despair of seeing all these accomplished, and hopes that the time is not far distant when the haulage even of coal scows will be done more cheaply than by horses.

Meantime he wishes it to be understood that the following comparison of the cost of the two systems applies exclusively to the results obtained from the experiments with the *Thomas*, running to and from Bowling with goods, and being some-

what in favor of steam, may be accepted as a good omen that better results will yet be obtained. For although this portion of the canal is favorably adapted for steaming, so far as depth and width are concerned, yet, owing to the great number of locks, and detention there, it is in other respects less favorably adapted than other portions, where the reaches are longer and the locks fewer.

#### Comparison of Cost of Horse and Steam Haulage. Horse Haulage to and from Bowling. Goods Lighter.

One master, per week	£1 1 0
One mate, " "	0 18 0
One horse and one man tracking, and making two trips per week	1 8 0
Ropes for tracking	0 2 0
	£3 9 0

Add interest on cost of lighter, £450, at 5 per cent., and for repairs and depreciation 7½ per cent. on same amount, per week

	1 1 7½
Total per week	£4 10 7½

Thus at two trips per week, £4 10s. 7½d. divided by 48 miles gives 1s. 10½d. as the cost per mile per boat load of 75 tons, or 0.3 of a penny per ton per mile.

#### The same with Steam.

One master, per week	£1 1 0
One mate, " "	0 18 0
One engine driver " "	1 0 0
Oil, tallow, and gasket, per week	0 3 8
15½ cwt. of coals per week	0 5 6½
	£3 8 2½

Add interest on cost of lighter, £450, engine £320, together, at 5 per cent., and 7½ per cent. on the same sum for repairs and depreciation

	1 17 0½
Total per week	£5 5 2½

Thus at three trips per week, £5 5s. 2½d. divided by 72 miles gives 1s. 5½d. as the cost per mile per boat load of 75 tons, or 0.23 of a penny per ton per mile.

From the slow rate of trackage by horses, no more than two trips per week are got, while with steam three trips are easily made; and hence arises a very considerable part of the above saving in favor of steam power.

From these figures it appears that the cost by steam haulage is at the rate of 17.5 pence per boat load per mile, or 0.23 of a penny per ton per mile, 0.3 of a penny per ton per mile; including in either case an allowance for tear and wear, and repairs, and interest on the price of the boat, and the same on the machinery in the case of steam. These rates are calculated on the supposition that the full load of 75 tons is carried both ways, but as that will not always be so in practice, the cost will generally be somewhat higher, whether by steam or horse haulage. And when the boat is only loaded in one direction and comes back empty, the cost will of course be still higher.

In the discussion which followed, it was remarked by Mr. Robson that the paper showed how the navigation of canals by steam had been effected at a less cost than by horse haulage in one particular instance. It would be observed, that in the *Thomas* with which this result had been obtained, the engine and boiler were put into a very small space at the stern. If, however, steam power was to be rendered applicable to canals of very small depth, like the Monkland, the engine and boiler would have to be squeezed into a still smaller space. He confidently expected this would be done, and it was one of the objects of his paper to bring this point before the Institution, in the hope of eliciting a suitable plan from some of the ingenious mechanical engineers amongst its members. If the system was to be applied to coal scows, it was necessary that the engine, boiler and propeller should not cost more than £150.

Mr. Milne, the engineer and superintendent of the Forth and Clyde Canal, stated, that at the low



speed of five miles hour of the *Thomas*, no appreciable wave was raised in the canal. If that speed was exceeded, wave would rise; but at a speed of five miles and under, the canal banks were unaffected. That speed was quite sufficient for the purposes of the traffic. The engine of the *Thomas* was sufficiently powerful to carry a much larger cargo than the present boat was capable of taking. He thought the efficiency of the boiler arose in some measure from the use of the tapered tubes. He had had considerable difficulty in getting such tubes; but he had recently succeeded in obtaining tapered iron tubes, a specimen of which he exhibited, and he intended to use them in future. The heating surface in the *Thomas's* boiler was  $\frac{1}{8}$  foot per superficial inch of piston, whilst in a number of locomotives with which he was acquainted it was on an average 2 8 feet.

It was asked if the different traders could be got to bring their boats punctually at the time appointed for starting the trains? Mr. Milne thought that this was one of the great difficulties connected with trains of boats; several traders could never be depended on to have their boats ready at the proper times. But the greatest difficulty with trains would be at the locks; the boats would have to be detached and passed through one at a time, and when boats were passing in the opposite direction, further delay would be caused; as if the going boats claimed the lock each time it was full, the returning boats would claim it each time it was empty.

It was remarked that, in the comparison given in the paper between steam and horse haulage, the latter had been put down at 3-10d. per ton per mile. In the case of minerals, the cost of horse haulage was, in many cases, not more than  $\frac{1}{8}$ d. per ton per mile.

Mr. Milne stated, that in the case from which the data for comparison were derived, there were only two-thirds of the mileage that was generally got with minerals. There were three locks every two miles on the canal between Port Dundas and Bowling; whilst on the mineral canals where the horse haulage was so low, the number of locks was much less; besides, the coal scows met with much less detention, when loading and unloading than boats carrying a general goods cargo.

Mr. Robson said he was aware of instances where the cost of horse haulage was as low as  $\frac{1}{8}$ d. per ton per mile, and he had thought it would be difficult to do it more cheaply. However, he had seen reason to alter this opinion. In horse haulage the number of trips was limited, whilst with steam one-third more trips could be got with a boat.

Mr. Milne was satisfied that with steam they would be able to carry at two-thirds of the cost of horse haulage, under any circumstances. Horses could not last beyond a certain time, whilst with  $\frac{7}{8}$  per cent. set aside for repairs, the duration of an engine might be said to be unlimited.

Prof. Rankine observed, that Mr. Robson's paper was a most important one. Canals were the best means of conveyance for heavy goods of small value for their weight, at low speeds, on account of the small propelling power required, and the consequent small cost. They had been neglected of late years, but undeservedly so, and it was gratifying to see them again attracting attention. Steam power had been found advantageous in every other application, and he thought it would eventually prove so in this. As mentioned in the paper, many schemes had been tried; amongst others was that of warping, by means of a chain lying along the bottom of the canal. He believed this plan had been used with advantage in tunnels where there was no towing path; but he thought it must be expensive. He thought it a pity that some other ingenious projects that had been formed had not been tried. There was one in particular, invented by Mr. Charles Liddell, in which fixed engines and wire ropes were to be used, and which would probably give very good results, if the traffic was sufficiently great to keep the apparatus continually at work. The case of the *Thomas*, detailed in the paper, was one of the first, if not the only instance, in which steam had been applied with practical economy.

### Personal Property in Ohio.

The following are the aggregates from the tabular statement, exhibiting the number and value of domestic animals, carriages, watches and pianos, as returned for taxation by Township Assessors for the year 1858, with returns of bank capital:

	No.	Value.
Horses .....	655,754	\$38,450,806
Cattle .....	1,718,640	20,836,979
Mules, etc. ....	7,300	501,784
Sheep .....	3,777,840	4,755,215
Hogs .....	2,541,904	6,191,373
Carriages .....	284,931	10,251,295
Watches .....	81,022	1,641,965
Pianos .....	7,602	1,026,800
Value of merchants' stocks .....		24,260,000
Investments in manufactures .....		9,247,000
Value of moneys at interest .....		21,862,000
Value of credits, books of accounts, etc. ....		57,628,900
Moneys invested in U. S. Stocks .....		630,000
State and Company Bonds and Stocks. ....		1,915,000
Other personal property subject to taxation, except Bank Stock .....		25,209,000

Total value of all personal property except Bank capital.....\$223,908,000  
Bank capital, incomplete.....5,066,000

### Semi-Annual Dividend.

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- 3rd. It will keep all journals and bearings cool, clean and bright as new, thus not only saving wear and tear, but saving also no inconsiderable amount of motive power.
- 4th. It is fully as durable as any Oil in the market, and consumers are invited to make their experiments on such journals as are inclined to heat up.
- 5th. It is sweet and clean, and entirely free from all odor or unpleasant smell.

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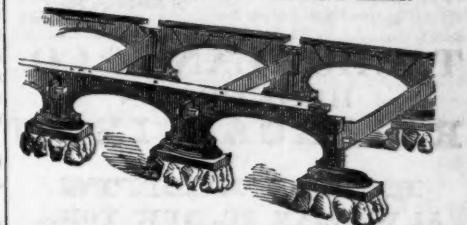
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Its density is greater,  
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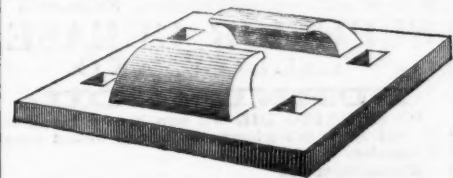
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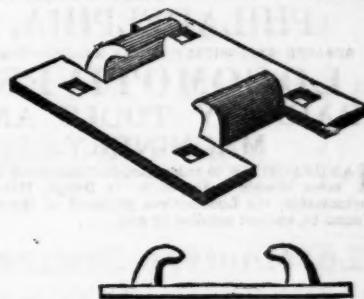
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